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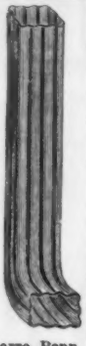

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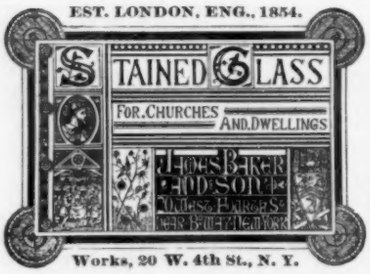

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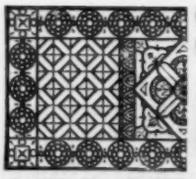

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Steam Heating.

T. H. BROOKS,
ARCHITECTURAL IRON-WORK,
ORNAMENTAL DIRECT RADIATORS,
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THE TAHANTO MANUFACTURING COMPANY,
Manufacturers of Decorative Articles in Metal.

Friezes, Panels, Mantel-Facings, Bas-Reliefs, &c., from Original Designs or those furnished, for the interior Decoration of Dwelling-Houses, Public Buildings, Hotels, Elevator-Cabs, Parlor and Passenger Cars, Steamers, &c., in Copper, Brass, Bronze, and Silver, reproducing with exact fidelity natural objects or other models.

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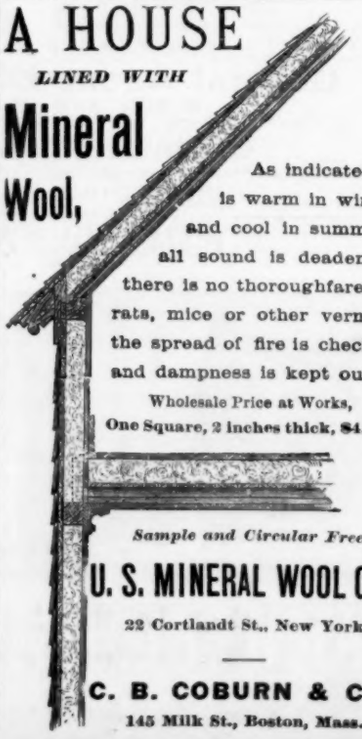
STANDARD VARNISH WORKS, D. ROSENBERG & SONS, Man'f's., 734-740 E 14th St., N. Y.

A HOUSE
LINED WITH
Mineral Wool,



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Hand-Hoists, etc., of the latest improved inventions now manufactured. Invalid Elevators a specialty.
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Manufacturers and Dealers in all kinds of
ELEVATORS,
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HYDRAULIC STEAM AND BELT ELEVATORS.
Hand-Hoists operated with ropes or cranks. Automatic Hatch-doors. Governors, and Safety-catches.
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Machinery Exclusively.
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ELEVATORS.
Send for Catalogue and Prices.
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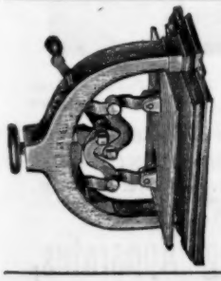
How to become a member:— Write for Circular and Application-Blank, and when received fill out your application, enclose $5 and forward it to the Secretary at New York, on receipt of which a policy will be promptly mailed to you.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ESPECIALLY ADAPTED TO
Public Buildings, Private Residences, Mills, Warehouses, Stores, and all Mercantile Structures.
IT IS POSITIVELY FIRE-PROOF.
WIRE LATHING possesses the following qualities:
IT IS NOT COSTLY.
IT IS EASILY AND CHEAPLY APPLIED.
PLASTERING ON THE WIRE LATH WILL NOT CRACK.
THE LATH WILL NOT CORRODE.
The plastering, when applied, clinches on both sides of the wire, forming a double surface.
THE WIRE LATHING is extensively used by the United States Government in its Custom House Court House, and Post Office Buildings.
It is indorsed by the leading Insurance Companies, who have applied it to their own fine edifices.
Full information given on application to the
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68 Beekman Street, New York. 148 Lake Street, Chicago.

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Much Preferred to
LINSEED OIL AND CHEAPER ALSO.
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White Lead and Linseed Oil.
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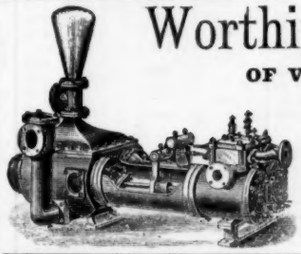
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OF VARIOUS TYPES AND PATTERNS.
SPECIAL PATTERNS
For Railway Water Stations, House Tank Service, Hydraulic Elevators, etc.
HENRY R. WORTHINGTON,
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CINCINNATI, CHICAGO,
ST. LOUIS, SAN FRANCISCO

HANOVER FIRE INSURANCE CO.

Cash Capital	$1,000,000.00
Reserve for Re-insurance	625,741.16
Reserve for all other Liabilities,	96,655.57
Net Surplus	832,744.56
Total Assets, January 1, 1883	2,565,141.29

BUILDING MATERIALS.
Reported for the American Architect and Building News.

BRICK.—₱ M.	New York. (Wholesale Prices.)	Boston. (Prices to Builders and Contractors.)	Chicago. (Prices to Builders and Contractors.)	Philadelphia. (Prices to Builders and Contractors.)
Common: *Cargo afloat.*				
Pale	$2 50 @ $3 50	Eastern 7 50 @ 8 00	Building Brick 6 50 @ 7 50	Hard 8 00 @ 8 50
Jersey	4 50 @ 5 50	Bay State Hard 9 00		Salmon 5 00 @ 6 00
Up River	5 25 @ 5 75	Domestic Com. 8 00 @ 9 00	Indiana Pressd 16 00 @ 28 00	Stretchers 11 00 @ 14 00
Haverstraw Bay	5 75 @ 6 25	Domestic Face 19 00 @ 20 00	St. Louis Fronts 25 00 @ 30 00	Pressed 20 00 @ 24 00
" 1st	6 25 @ 6 50			
Fronts:				
Croton, Brown	13 @ 14 00	Philadelphia 40 00 @ 45 00	———	———
" dark	14 @ 15 00			
" red	14 @ 15 00	Phila. mould 50 00 @ 80 00	———	———
Chicago pressed			22 00 @ 35 00	———
Chicago Moulded			65 00 @ 350 00	
Baltimore	37 @ 41 00		50 00 @	———
Glens Falls—white	30 @ 35 00	Glens Falls 25 00 @ 26 00	———	———
Philadelphia	@ 27 00		42 00 @	———
Trenton	@ 27 00		40 00 @	———
Milwaukee		Glens Falls Mould.	25 00 @	———
Moulded:			60 00 @ 100 00	———
Clark's Glens Falls—Red	25 00 @ 27 00	30 00 @ 35 00	30 @	———
" —White	30 00 @ 35 00	35 00 @ 40 00	35 @	
White " Mold	45 00 @ 60 00	45 00 @ 60 00	55 00 @ 65 00	
Enamelled: *Imp.*				
Enamelled (edge.)	85 00 @ 100 00	@	@ 100 00	Dom. @ 70
Enamelled (edge and end)	90 00 @ 115 00	@	@ 125 00	@ 85
CEMENT, LIME, etc.—(₱ *cask.*)				
Chicago Lime in bulk			65 @ 75	
Wisconsin "			80 @ 90	
Rosendale Cement	80 @ 1 10	@ 1 50	*Not Sold.*	1 25 @ 1 65
Utica, Akron, Buffalo, Louisville, Milwaukee	*Not sold.*	*Not sold.*	1 00 @ 1 25	*Not sold.*
Portland (English)	2 60 @ 3 10	@ 3 20	2 75 @ 3 00	2 50 @ 3 50
" (Saylor's Am.)	2 05 @ 2 40	2 50 @ 3 00	2 75 @ 3 00	2 50 @ 3 00
" (Dyckerhoff)	2 75 @ 3 15	3 00 @ 3 50	3 25 @ 3 75	3 00 @ 3 25
" (Lafarge)	3 50 @ 3 75	*Not sold.*	3 75 @ 4 25	4 50 @
" (Star)	2 75 @ 3 00	*Not sold.*	*Not sold.*	*Not sold.*
K. B. & S. (Eng.) Portland	2 85 @ 3 10		3 35 @ 3 50	3 00 @ 3 25
Burham " "	2 60 @ 2 80		3 15 @ 3 35	2 75 @ 3 00
Vorwohler	2 65 @ 3 25		3 00 @ 3 25	
German (Fewer)	2 50 @ 2 70	3 15 @ 3 35	3 15 @ 3 35	
" (Alsen)	2 50 @ 2 80	3 00 @ 3 50	3 15 @ 3 35	2 90 @ 3 25
Selenitic		1 65	*Not sold.*	
Hydraulic Lime of Teil	3 50 @ 4 00		*Not sold.*	
Roman	2 75 @ 3 00	@ 3 20	2 75 @ 3 25	3 25 @ 3 50
Keene's coarse	5 00 @ 6 00	@ 7 50	7 50 @ 9 00	6 50 @ 7 00
" fine	9 25 @ 10 25	@ 11 50	11 00 @ 12 50	11 50 @ 12 00
Lime:				
Rockland and Rockport, (Com.)	@ 1 00	@ 1 10	*Not sold.*	1 00 @ 1 25
Rockland and Rockport, finish	@ 1 20	@ 1 15	*Not sold.*	
State, com. cargo rates (nom.)	75 @ 80	*Not sold.*	*Not sold.*	*Not sold.*
State, finishing "	@ 1 00	*Not sold.*	*Not sold.*	*Not sold.*
Plaster of Paris (calcined.)	1 30 @ 1 35	1 70 @ 1 90	@ 1 75	1 60 @ 2 25
" (casting)	1 50 @ 1 65	@ 2 25	@ 2 00	2 25 @ 2 50
Hair (Cattle) ₱ *bush*	21 @ 25	@ 30	30 @ 35	24 @ 31
" (Goat)	32 @ 35	@ 30	35 @ 40	@
Sand, ₱ *load*	1 00 @ 1 25	@ 1 50	100 @ 1 25	75 @ 1 50
STONE. (₱ *cubic foot, rough.*)				
Granite: (*Maine*)		@ 60		
Limestone:				
Bedford	@ 1 00	95 @ 1 00	50 @	3 75 @
Joliet	@		35 @ 55	
Lemont	@		35 @ 60	
Serpentine	@		80 @ 90	

(Continued on page vi.

10

For a Sash of 250 lbs.

"MORTON'S METAL"

(Registered Trade-mark, May 1st, 1883.)

Cable and Champion Sash-Chains

and Patented Attachments.

The most **RELIABLE** and **CHEAPEST** article in the market for suspending

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HAS GREAT TENSILE STRENGTH,

Can be easily applied to any window, and gives SATISFACTION wherever used. Samples sent to any ARCHITECT free on application. Now in use in all the leading cities throughout the United States.

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BUILDING MATERIALS.

	New York. (Wholesale Prices.)	Boston. (Prices to Builders and Contractors.)	Chicago. (Prices to Builders and Contractors.)	Philadelphia
Foundation:				
Dimension	@	5 00 ℔ ton	20 @ 28	30 @ 5 00
Block	@	4 60 ℔ perch	8,50 ℔ cord.	50 @ 6 00
Rubble	@	1 25 @ 1 50	8 50 @	
Bluestone: (℔ sq. ft.)				
Sidewalk	30 @ 5 00	40 @ 1 75	75 @ 1 00	70 @ 90
Planed	50 @ 6 00	75	50 @ 1 00	1 10 @ 1 25
Sandstone.				
Longmeadow		75 @ 85		
Brown (Connecticut)	1 00 @	1 25 @ 1 45	1 50 ℔ cub.ft.	
Amherst	1 00 @	90 @ 1 00	55 @ 65	
Berea	75 @ 1 00	80 @ 90	45 @ 55	70 @ 90
Berlin	75 @ 1 00	80 @ 90	55 @ 65	
Bay of Fundy	@ 1 00	*Not sold*	*Not sold.*	
Belleville	80 @ 1 25	1 25 @ 1 35	"	
New Brunswick	@ 1 00	90 @ 1 00	"	
Caen	@	@ 2 00	"	
Marble:				
Lee, Mass	@	1 75 @ 2 50	*Not sold.*	2 00 @ 2 50
Rutland, white	@	@ 3 00	3 50 @ 5 00	2 25 @ 2 50
Sutherland Falls	1 25 @ 1 75	@ 2 00	3 50 @ 5 00	1 50 @ 2 50
Glens Falls, black	@	2 00 @ 3 00	*Not sold.*	4 00 @ 4 50
Italian, blue-veined	@	50 @ 60	@ 4 40	—— @ ——
" Sienna	@	3 00 @ 3 50	*Not sold.*	3 25 @ 6 50
Tennessee, red	@	1 25 @ 2 50	@ 4 00	2 00 @ 3 00
" Knoxville	@	85 @ 90	@ 4 00	@ 1 50
Pennsylvania, blue	@		*Not sold.*	2 23 @ 2 50
Vermont, white	@	1 50 @ 2 00	3 50 @ 5 00	
Slate:				
Roofing, (℔ *square*)	@			
" green	7 00 @ 8 00	4 50 @ 7 00	6 25 @ 8 10	@ 7 00
" purple	7 00 @ 8 50	5 50 @ 6 50	@ 8 60	@ 7 00
" red	@ 15 00	13 00 @ 14 00	—— @ 16 00	5 00 @ 5 75
" black, Lehigh	—— @ ——	*Not sold.*	7 20 @ 7 60	5 00 @ 5 75
" " Chapmans	—— @ ——	*Not sold.*	7 30 @ 8 00	6 00 @ 6 25
Tiles, Am. ℔ M.	@		*Not sold.*	@ 15 00
LUMBER.—℔ M. *(Ordinary dimensions.)*				
Boards:				
Pine, 1st quality, clear	65 00 @ 75 00	50 00 @ 53 00	44 00 @ 49 00	
" 2d quality	55 00 @ 60 00	42 00 @ 44 00	40 00 @ 46 00	
" 3d quality	18 00 @ 22 00	35 00 @ 38 00	37 00 @ 44 00	
Spruce	@ 25 00	11 00 @ 12 50	*Not sold.*	
Hemlock	ca. 17 @ 18	12 00 @ 12 50	@ 10 00	11 50 @ 15 00
Yellow pine	20 @ 40	30 00 @ 33 00	@ 28 00	16 00 @ 18 50
Cypress	@	@ 35 00	@	@
Clapboards:				
Pine	@	33 00 @ 55 00	14 00 @ 22 00	—@—
Spruce	@	23 00 @ 30 00	*Not sold.*	—@—
Framing Timber:				
Pine			13 00 @ 15 50	25 00 @ 35 00
Spruce	14 00 @ 18 00	13 50 @ 14 50	*Not sold.*	18 50 @ 20 00
Hemlock	12 00 @ 15 00	@	13 00 @ 19 00	12 00 @ 13 00
Yellow pine	20 00 @ 30 00	21 00 @ 25 00		22 00 @ 24 00
Laths:				
Pine	@	2 00 @ 2 25	2 25 @	—@—
Spruce	2 00 @ 2 25	2 00 @ 2 25	*Not sold.*	2 40 @ 2 60
Shingles:				
Pine, shaved	5 00 @ 6 00	@	*Not sold.*	
Pine, sawed	4 00 @ 5 00	@ 4 50	2 25 @ 2 60	
Spruce, sawed	2 50 @ 2 75	@ 1 50	*Not sold.*	
Redwood	2 10 @	@ 3 00	5 50 @ 8 00	30' $10 @ 28
Cedar, split	@	@	*Not sold.*	24" 8 @ 21
Cedar, sawed	@	2 00 @ 3 50	@ 2 30	20" 5 50 @ 14
Cypress 7 x 24	18 00 @ 20 00	5 50 @ 6 00	*Not sold.*	16 00 @ 20 00
Miscellaneous:				
Piles ℔ ft.	4½ @ 6	Piles 6c. ℔ ft.	*Not sold.*	
Fence pickets, Spruce	8 00 @ 10 00	10 00 @ 18 00	Pine, 8 @ 22	12 00 @ 14 00
Cedar posts, 9 ft. (sq. posts.)	@	25 @ 35	9 00 @ 21 00	70 @ 1 25
Chestnut "	@	25 @ 35	*Not sold.*	28 @ 36
Finishing Woods: ℔ M. *First Quality, Kiln-dried.)*				
Ash	@ 55 00	38 00 @ 48 00	35 00 @ 40 00	
Cherry	80 00 @ 120 00	60 00 @ 90 00	75 00 @ 85 00	55 00 @ 65 00
Chestnut	@ 55 00	38 00 @ 50 00	45 00 @ 50 00	60 00 @ 80 00
Butternut	40 00 @ 60 00	60 00 @ 70 00	45 00 @ 60 00	55 00 @ 65 00
Mahogany, Baywood	@ 180 00	100 00 @ 150 00	150 00 @ 180 00	100 00 @
" St. Domingo	@ 350 00	180 00 @ 250 00	250 00 @ 300 00	
Maple	45 00 @ 50 00	45 00 @ 65 00	30 00 @ 35 00	30 00 @ 50 00
Oak, red	@ 70 00	@ 50 00	35 00 @ 40 00	35 00 @ 45 00
" white	@ 70 00	@ 55 00	35 00 @ 40 00	55 00 @ 65 00
" quartered	@ 90 00	65 00 @ 70 00	50 00 @ 55 00	70 00 @ 80 00
Sycamore quartered		@ 65 00		
Pine, clear	65 00 @ 70 00	30 00 @ 65 00	45 00 @ 50 00	65 00 @ 90 00
Redwood	70 00 @ 75 00	60 00 @ 70 00	60 00 @ 70 00	100 00 @
Rosewood ℔ lb	@ 6		@ 7	
Walnut, black	125 00 @ 150 00	85 00 @ 100 00	80 00 @ 100 00	160 00 @ 200 00
Whitewood	45 00 @ 50 00	38 00 @ 45 00	32 00 @ 35 00	20 00 @ 30 00
Yellow pine ℔ M	@ 45 00	40 00 @ 45 00	30 00 @ 35 00	30 00 @ 35 00
Gumwood, best red			30 00 @ 35 00	
PAINTS. *(In oil, ℔ lb.)*				
White lead, Am.	6½ @ 6½	5½ @ 6½	6½ @ 6½	4 @ 6½
" Zinc, "	5 @ 8½	8 @ 12	7 @ 11	4 @ 8
Red, Am.,	6 @ 6½	@ 12	*Not sold.*	
" Venetian	6 @ 10½	7 @ 12	1½ @ 2½	4 @ 6½
" Vermilion	55 @ 60	55 @ 60 dry	50 @ 75	Am. 12 @ 16
Red Indian, Eng	12 @ 20	14 @ 20	12 @ 20	12 @ 16
Yellow Ochre	6 @ 15	7 @ 12	3 @ 15	4 @ 9
" Chrome	12 @ 20	18 @ 25	12 @ 25	12 @ 25
Green (chrome)	8 @ 13	12 @ 20	8 @ 20	9 @ 14
Green, Paris,	16 @ 20	25 @ 40	16 @ 35	14 @ 29
Black, lamp,	8 @ 12	15 @ 25	8 @ 30	12 @ 18
Blue, ultramarine	12 @ 18	18 @ 30	10 @ 35	20 @ 35
Oil, linseed, (raw) (℔ gal.)	56 @ 57	54 @ 59	57 @ 60	54 @ 58
" " boiled (℔ gal.)	59 @ 60	57 @ 62	60 @ 62	57 @ 60
Turpentine (℔ gal.)	30 @ 32	36 @ 43	35 @ 38	38 @ 41
Varnish, coach (℔ gal.)		1 50 @ 6 00	1 25 @ 2 00	1 40 @ 4 00
Shellac (℔ gal.)		2 50 @ 3 00	3 25 @ 4 00	1 75 @ 3 00
Putty ℔ lb.	2 @ 3	2 @ 4	02 @ 03	2 @ 2½
Whiting ℔ cwt.	50 @ 90	1 @ 1½	1 @ 2	½ @ 7-10
Paris white, (Eng.,) ℔ cwt.	30 @ 2 00	2 @ 3	2 @ 2½	1 30 @ 1 60
Litharge, Am	5½ @ 5½	6½ @ 7	6½ @ 10	6½ @ 7
Sienna, (burnt)	12 @ 17½	14 @ 20	4 @ 16	9 @ 14
Umber, "	11 @ 16½	14 @ 20	@ 10	9 @ 14

(Continued on page vii.)

FOR HEAVY SASH

USE

RAYMOND'S

Compressed Lead Sash Weights.

With Wrought and Malleable-Iron fastenings.

Twice the heft of iron. Occupying only half the space.

Prices no higher than the ordinary cast lead-weights.

Freight allowed to any part of the country.

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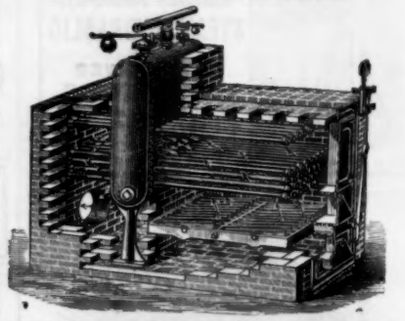
THE HOLLAND

Patent Wrought-Iron Boiler

FOR STEAM HEATING.



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GOLD'S

Electric Warm Air Wrought-Iron Heaters.
Sectional Boilers.

Steam Compound-Coil Wrought-Iron Circulating Heaters.
Pin Radiators.

Combined Water and Steam Wrought-Iron Heaters, heated by live or Exhaust Steam for Cars, Factories, Shops, Conservatories, Public and Private Buildings, etc.

Saving in fuel fifty per cent over any other system.
Plans, specifications, & estimates furnished on application.

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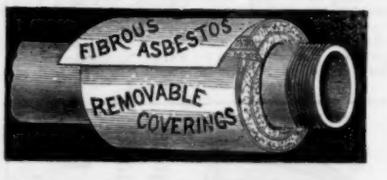

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Asbestos Building-Felt, Fire-Proof Cements, &c.

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Steam Heating Apparatus,

For Public or Private Buildings.

Sole New York Depot For the Sale of the

Albany Steam Trap Co.'s Specialties.

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Heating and Ventilation.

The GOODWIN GAS STOVE & METER CO.,
MANUFACTURERS OF
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The most economical in use. Over 50 different kinds. Suitable for Families, Hotels, Restaurants and Public Institutions. Laundry, Hatters' and Tailors' Heaters. Hot-Plates, Warming-Closets for Pantries. Hot-Water Generators, etc., etc.

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FURNACES,
For burning Coal-dust, Sawdust, &c., will save from 50 to 90 per cent in your Fuel Account.
Send for descriptive Circular.
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Steam Heater.
FOR DWELLINGS, PUBLIC BUILDINGS, RAILWAY STATIONS, OFFICES, &c.
Low Pressure, Self Regulating, Economical, Cheap, Durable.
UNIFORM HEAT. NO GASE DUST, OR SMOKE. NO OBJECTIONS.
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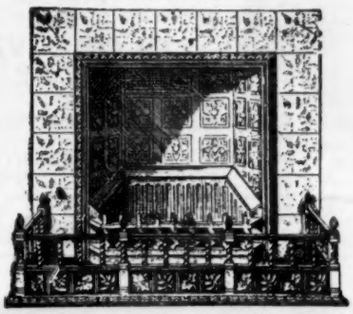
THOMAS S. DIXON & SONS,
MANUFACTURERS OF

FINE GRATES
Furnaces, Ranges.



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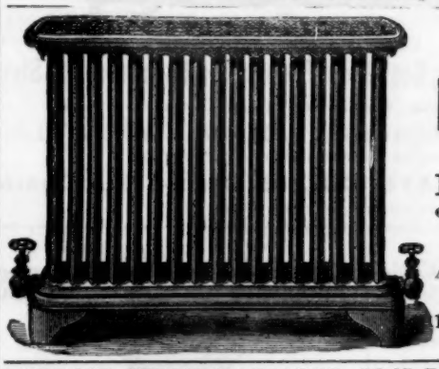
Gas-Log Fires.

IMPORTERS OF ENGLISH AND FRENCH FIRE-PLACE FITTINGS.
1330 Chestnut Street, - - Philadelphia.



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MANUFACTURERS OF
Heating Apparatus,
For Public Buildings and Private Dwellings.
REED'S RADIATORS,
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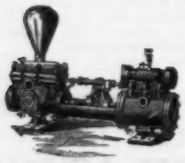

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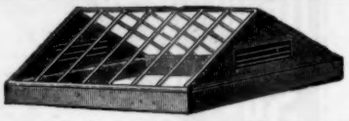

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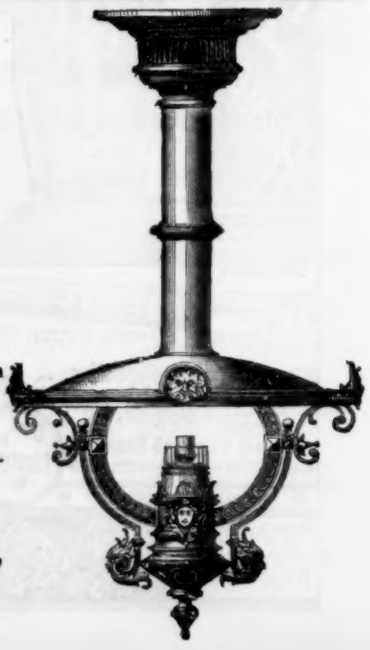

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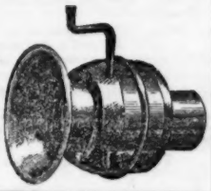

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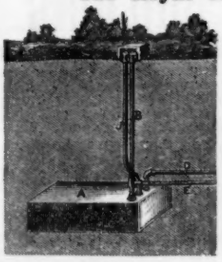

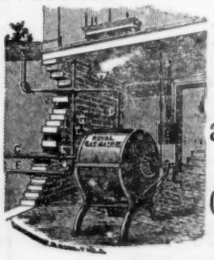

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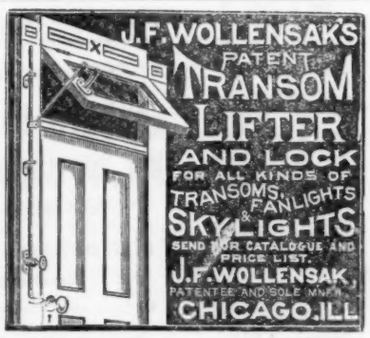

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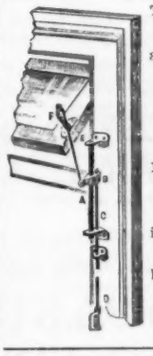

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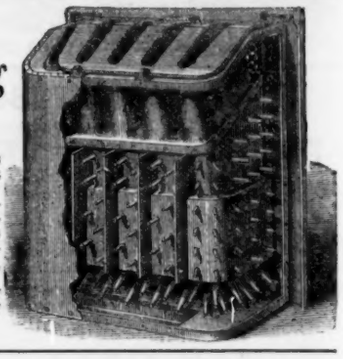

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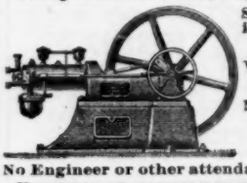

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SEPTEMBER 20, 1884.

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A GREAT deal has been said in the newspapers of late about a scheme of the American Art Association of New York, for encouraging the art of painting in this country. The encouragement is to take the form of the offer of prizes, which are to be awarded in March next in a competition, open to all American painters. Six prizes, of twenty-five hundred dollars each, are to be given, and the competing pictures are to be exhibited, first at the rooms of the Art Association, 940 Broadway, New York, where the jury will view them and make its award, and subsequently in all the principal cities of the country. The pictures adjudged worthy of the prizes will become the property of the Association, which agrees to distribute them by lot among the museums of those towns whose citizens have shown the greatest interest in the "enterprise" by subscribing most liberally toward the fund to be raised for guaranteeing the payment of the prizes. The names of thirty gentlemen who have already signed the subscription list are published, and it must be acknowledged that these names carry with them associations of responsibility and intelligent benevolence which lend unusual attractions to what would, under other auspices, strike the unimaginative observer as a shrewd money-making scheme. Reduced to its briefest form, the programme of "encouragement" simply sets forth that the promoters hope to get together, without any outlay or risk, a large and very interesting collection of pictures; to secure, also without expense, the exclusive privilege of exhibiting the whole collection for an undetermined period, in any part of the country where such an exhibition would be profitable, and finally to buy the six best pictures at rather a low price, and present them to certain well-frequented museums, in return for the advertising which the association would receive from the card, which the museums receiving them are obliged to attach to them, recounting the circumstances under which they were obtained.

WHAT this sort of a view of the matter is probably a mistaken and discreditable one we are quite willing to admit, if necessary, and we hold ourselves ready to receive with rejoicing the incontestable evidence that this competition, unlike nearly all the others of the kind which have taken place in this country, is sure to result in stimulating a large number of enthusiastic and able painters to put forth their highest efforts; in rewarding, to the satisfaction of all, the very best among them, and in consoling the unsuccessful competitors with the consciousness that they have been fairly defeated in a struggle which did them all honor. That it is possible to have such competitions as this, every one who has studied the history of art knows; but every one who has observed the course of contemporary art in this country knows that they are indeed rare here, their place being almost invariably occupied by snarling scrambles, from which nothing results to all concerned but loss of time, temper, reputation and money. One or two exceptions to the usual American rule of artistic competitions will occur to some of our readers, in those carried out by Messrs. Fuller, Warren & Company, for the purpose of obtaining new designs in wall-papers, and later, in the Christmas and Easter card competitions. In all these the object was purely commercial: those who devised them, and who paid the prizes, did so with the single idea of profiting by them, and yet they have not only brought credit to all who took part in them, but have, particularly in the case of the wall-papers, developed, in the Wheeler and Tiffany designs, a novelty and imaginativeness of treatment which has never been surpassed, and which give prophecy of the most brilliant results when the long suffering plant of art shall have fairly taken root in the rich American soil; while the philanthropic and patriotic competitions have, without a single exception that we remember, ended in exasperating, if not in defrauding, the artists who took part in them, and in securing results for art which it is charitable to call mediocre. To those who take pains to watch the conduct of such affairs, the reason of the difference in success between the two kinds is plain. To sum it up in one sentence, in the successful and creditable competitions the judges are professional artists, in the other kind they are not. In this single item lies the whole secret of the advancement of art by competition. We are told, we hope incorrectly, that the jury in the competition for the American Association's six prizes is to consist of ten persons selected from the subscribers to the guarantee fund, these being, so far as the list is published, all rich men, merchants, bankers, and manufacturers, most of them being also collectors of pictures. If this plan is carried out, whatever may be the good or bad faith of the management, we predict that the enterprise will totally fail in encouraging any kind of art, American or otherwise, that deserves encouragement. We know well enough that millionnaires generally consider themselves excellent judges of painting, and value themselves upon the skill with which they distinguish the works of various masters; but whatever they may think, the fact remains unchanged that neither they nor any others out of the profession are fit judges of painting, or have in matters of the kind a discrimination which has the slightest value in comparison with that of a thoroughly trained artist. Even if a layman were found capable of acting on such a jury, his award would command no respect among painters, and few good ones would condescend to submit their work to his judgment. The greater the ability of an artist, the more strongly he feels that the applause of his rivals is the only sure test of merit, and the more scornfully does he leave for quacks and humbugs the devices by which the suffrages of unprofessional persons are to be won. If the American Art Association wishes to engage in its contest the men and women through whom the development of painting in this country must come, if it comes at all, the only way to accomplish its wish is to give up at once the idea of setting editors and brokers to decide upon technical merit, and employ as its sole jury one or more of the most eminent painters who can be induced to act in that capacity. If such an artist as Millais, Burne-Jones, Whistler, Sir Frederick Leighton, Duran, Bastien-Lepage, Gérome, Meissonier, or a dozen others equally famous would serve, there would be no need of more than one. The idea of appearing before such a judge would have a two-fold influence for good, eliminating the conscious humbugs, who would carefully shun any contest which seemed likely to end in reducing their reputation to its true level, and stimulating modest ambition by the prospect, dear to every one who earnestly endeavors to improve, of learning the exact truth regarding the success or failure of his efforts.

THE *Sanitary News* gives us a little information concerning the present condition of that most interesting enterprise, the Pullman sewage-farm. Some months ago a discussion took place in Boston in regard to the merits of various systems of sewage disposal, in the course of which some one quoted the example of the Pullman farm as an illustration of the possibility, which is generally denied by engineers, of utilizing drainage liquid with some pecuniary as well as sanitary advantage, but the effect of his remarks was completely destroyed by the announcement, made in the meeting, that the Pullman sewage-farm was soon to be abandoned, and that works were already in progress for discharging the town drainage into the lake. We suppose that hundreds of persons were, like ourselves, surprised and disappointed at hearing in this way of the failure of the most important experiment in sanitation ever undertaken, and we imagine that some of them shared our indignation at

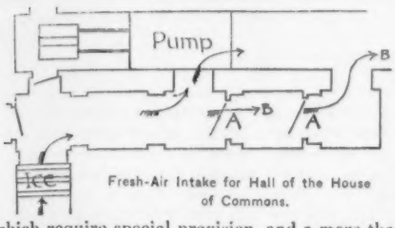
learning, some time afterward, that the statement was false, and that the sewage-farm, so far from being abandoned, had yielded a return for the past year quite equal to what had been anticipated from it, while hopes were entertained of carrying it on during the next season with still greater success. These hopes, according to the *Sanitary News*, are in a fair way to be realized, the results of the present year promising to be far better than those of the last. We should be glad to learn fuller details of the season's management, but it is interesting to know, as the *Sanitary News* informs us, that one hundred and seventy acres of land have been laid out in gardens, while three hundred and twenty acres have been utilized for pasturage, and four hundred for oats, corn and grass. Among the garden-crops in cultivation are three hundred thousand cabbages in a single bed, and five hundred thousand celery plants in another. We suppose that the whole tract is to a greater or less extent fertilized by sewage, but at all events the management of the farm seems to justify the opinion we have before expressed, that both pecuniary and sanitary success in sewage utilization must be sought in the extension of such works on a much larger area, in proportion to the amount of waste waters to be disposed of, than has hitherto been customary, in order that the ground intended to be fertilized by them might be fed with just as much as it requires, and no more, instead of being drowned in a deluge of sewage, which only a few rank-growing crops can flourish in. According to these figures, the Pullman sewage-farm has eight hundred and ninety acres in cultivation, or about one acre to every ten inhabitants of the town. This is a very different thing from the English sewage-farms, in some of which the land is flooded with from fifty to one hundred times as much liquid as at Pullman, and the result shows the great superiority of the Pullman system. Of course, the first cost of providing half an acre of land for purifying the drainage of every house in a large city would be very great, unless the sewage were carried a long distance, but if trials on a small scale, like that at Pullman, should prove that in this way a moderate interest on the cost of the land could be secured, there would be no further difficulty about the general adoption of the system.

THE *Revue Industrielle* gives an interesting account of some experiments made to determine the resistance of fire-proof floors of iron beams with concrete between, as compared with those filled in with brick arches. Until within a few years the subject of concrete floors supported by iron beams has been misunderstood, nearly all writers, in the early days of concrete construction, claiming that a slab of hardened cement and sand between two iron beams was held up by the strength of the "contained arch," this being explained to be formed by particles of sand, which, under the influence of a vertical pressure, arranged themselves in the form of the arch best adapted for resisting that pressure. At this day the idea of holding up a floor on arches of sand would be laughed at, but the theory was once readily accepted, and concrete used to span wide spaces was always moulded in the arch shape. In building the Metropolitan Railway through London, a considerable portion of the road was covered with arches of the Dennett concrete, of about twenty feet span, and it was not until an examination showed these wide arches to be entirely without thrust that the former idea was abandoned and they came to be regarded by engineers in their true light, as curved lintels. As the best and strongest form of lintel is totally different from that of an arch used under the same circumstances, the correction of the theory ought naturally to have led to a modification in the forms under which concrete is used, but the influence of the old notion still shows itself in practice, leading, every year, to the waste of thousands of dollars' worth of good cement and sand, which serve no purpose except to burden the floor-beams which hold them up.

EVEN a useless weight of material has not always made concrete floors as strong as they should be, and sudden shocks, particularly, have often caused serious damage, so that the designer of a certain warehouse in Germany, unable to find definite data of the resistance of such floors, resolved to make trials for his own information, and incidentally for that of his professional brethren. The warehouse was of immense size, covering nearly an acre of ground, and was intended for the storage, among other things, of heavy pieces of metal, the handling of which often involved considerable shocks to the floors. The whole building was fire-proof, part of the flooring being of brick arches in cement, between iron beams, and part of concrete slabs supported in the same way. Five trial floor-arches were built, each forty-four inches in span, of which the first consisted of concrete, made with one part Portland cement to five parts of gravel, while the second was of hard bricks in Portland cement mixed with three parts of sand, and was covered with a coat of asphalt three-quarters of an inch thick; the third was of softer brick, in mortar containing one-half as much lime as cement, and four parts sand; the fourth was of the same brick, in equal parts of lime and cement, and five parts sand; and the fifth was of the same brick, in cement alone, mixed with four parts sand. These last floors were finished with a coat of cement, three-quarters of an inch thick or more. Fifty-four days after their completion, each floor was loaded with pig-iron to the amount of two hundred pounds to the square foot. This weight had no effect, and two days later the concrete arch was tested by letting fall upon it an iron ball of sixty pounds' weight. This, dropped from a height of five feet, did no harm, and another ball, of one hundred and thirty-five pounds' weight, was let fall from the same height. The first blow produced no effect, but by dropping the ball repeatedly on the same spot a crack was started at the fourth blow, and the eighth broke a hole entirely through the floor, the opening being four inches in diameter at the top, and twenty-four inches at the under side. Thirty days later the same test was applied to another part of the floor, and a hole of the same size and shape was broken through at the ninth blow of the ball. The thickness of the concrete in the middle of the span was four inches. Trials were made of the brick floors in the same way. The first, of hard brick in strong cement mortar, stood forty-eight blows of the heavy ball before it was pierced; the second, of softer brick, with lime added to the mortar, gave way at the tenth blow; the third, at the seventh blow; and the last, of soft brick in sandy cement mortar, without lime, at the tenth. In all these cases the hole broken through was much larger at the intrados than at the extrados. A new floor was then built of soft brick, in mortar made with two parts lime to three of cement and ten of sand, and covered with a layer of concrete, of equal parts of cement and sand, two inches thick. After this had set, the floor required seventy-one blows of the one hundred and thirty-five pound weight to break it through. This protective effect of the thick layer of concrete over bricks is very curious, but aside from this, the result of the tests was decidedly in favor of the brick arching.

THE *Iron Age* contains a lively letter from a working-man who has recently removed from the model town of Pullman, unable to endure any longer the paternal, not to say inquisitorial system of administration by which the admirable municipal regulations of that town are carried into effect. According to the writer, who ought to know what he is talking about, and certainly seems intelligent enough to have understood the rules he was obliged to live under, all the houses in the city of Pullman are the property of the Pullman Land Association, and must be hired from the Association. The rent, according to the regulations of the Association, is paid monthly, in advance, by the employer of the tenant, who deducts the amount from the wages due him. No repairs or improvements of any kind are allowed to be made by the tenant. Even the putting up of a clothes-hook must be done by the agents of the Association, upon the petition of the tenant, and the bill for the service is sent to the employer, who deducts the amount from the wages due. The sanitary inspection is, indeed, thorough, but it is made so by requiring the tenant to admit the inspectors at any and all times to all parts of the house, so that his household is constantly in the condition of a Russian family suspected of revolutionary sentiments. The advantages of living in Pullman did not seem, to this sensitive individual, to counterbalance the annoyances. Although a part of a house, with hall and cellar in common with another family, and no bath-room, could be had at a price varying from twelve to seventeen dollars a month, the cheapest whole house, with bath-room, that he could find was rented at twenty-five dollars a month, with water extra. This house was out on the prairie, twenty minutes' walk from the post-office, and after living in it a year, with, as the writer says, "a burden on his conscience all the time" at the surveillance to which he was subjected, he left the place altogether, and returned to a less scientific, but more congenial mode of living.

THE HEATING AND VENTILATION OF THE HOUSES OF PARLIAMENT, LONDON.



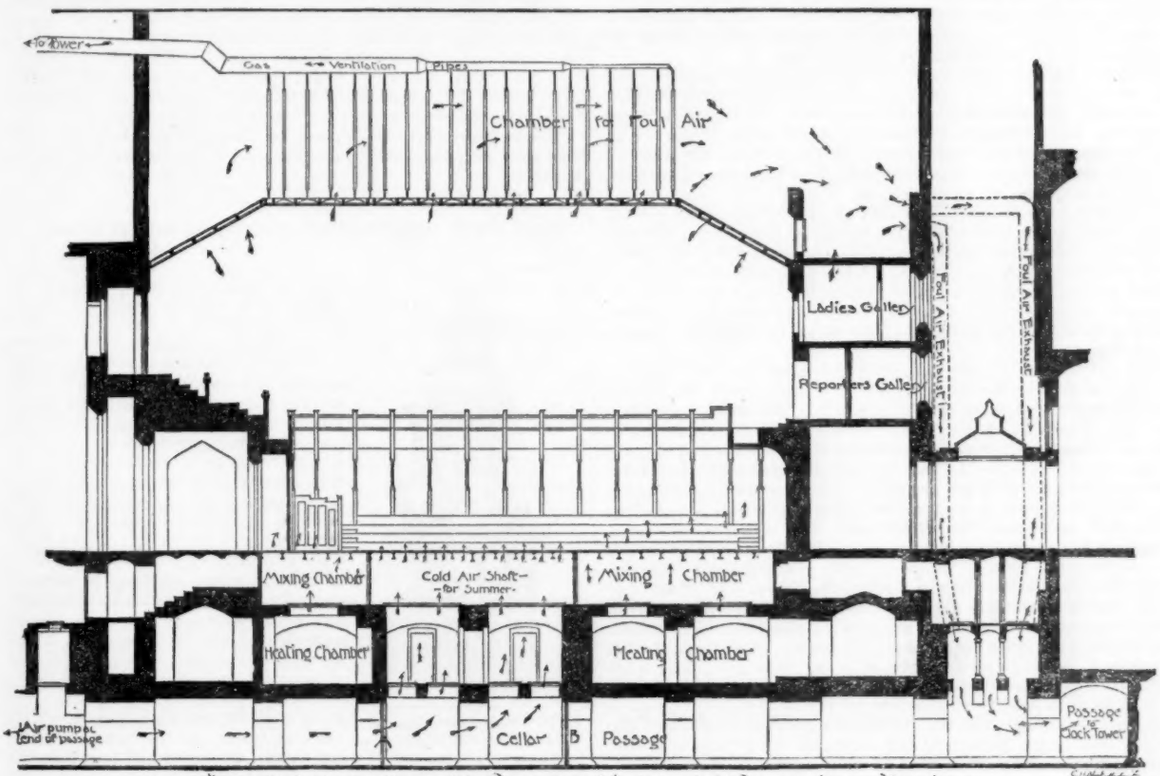
Fresh-Air Intake for Hall of the House of Commons.

IN the heating and ventilation of the halls occupied by the British Houses of Parliament, there are many complications which would never occur in connection with an ordinary assembly-hall or theatre, and which require special provision, and a more than ordinary control of the working apparatus. The Houses rarely meet until late in the afternoon, and the sittings are frequently prolonged until morning. The House will sometimes be crowded full, and within five minutes will empty itself of all but twenty-five or thirty members, the number swelling again as quickly when an interesting subject is announced. Naturally the heating required for thirty persons would be much greater than that necessary for a thousand, and special devices have to be resorted to in order that the change in the number present may at once be accompanied by a corresponding change in the amount of heat supplied. Again a system which would work to a charm with the outside temperature at 40°, might fail entirely when the temperature rose to 90°; and accordingly the heating and ventilation of the Houses of Parliament can be said to follow no particular system, but to combine a number of schemes, with some special arrangements of its own.

The portion of the building occupied by the House of Lords is open on each side to inner courts, the hall being in the main story some twenty-five feet above the ground. The fresh air is taken in at the basement from either court, depending upon the direction of the wind at the time; and receives a proper degree of moisture from a number of fine sprays of water which are continually in operation in the arcades opening from the court. The air enters the building through large blinds with movable slats, and is made to pass through a strainer of fine canvas into a low chamber, the size of the hall above. From this chamber the air rises into a second room immediately over, which serves as a mixing-chamber, where the temperature of the air is thoroughly equalized. Thence it ascends directly into the hall through the floor, which is entirely made of a heavy iron grating, resting on light iron beams, and covered with wire netting. The carpet is made with a very open mesh, which allows the air to pass freely.

The incoming air is not cooled here any further than by the sprays of water before mentioned, which will reduce the temperature about four degrees. This is found to be sufficient, as the House of Lords is not a large body, and the hall is only 45′ x 90′, and about forty-five feet high.

The air is warmed in cold weather by steam-pipes placed in the lower air-chamber. These pipes are not in coils, but are laid in horizontal sections about five feet long, crossing the chamber lengthwise in four lines, each section is made of a length of two-inch iron-pipe, tinned on the outside, and passing through a series of eight-by-twelve-inch zinc plates, one-quarter inch thick, which are placed three-quarters of an inch apart, and soldered to the pipe. These plates rapidly take up the heat from the pipe, and it is claimed that a great deal is thrown off from them at a low temperature, so that the air in passing over them never acquires any burnt smell, such as is so often noticed about pipes highly heated by steam. But the great advantage of this arrangement is that the amount of heat supplied to the room above can be suddenly increased or diminished at will. Attendants are always on hand below when the House is sitting, and when for any reason less heat is required, the radiators are simply covered with cloths, which are always kept in place beside each section. This confines the heat in the spaces between the plates, and as the degree of radiation is not great, the confined air will become quite highly heated before any heat passes through the cloths. Of course, if the room above is to be crowded for some time, the supply of steam can be stopped; but the cloths serve perfectly to suddenly lessen the amount of heat supplied, and the chief engineer has assured me that by using them and admitting more or less cold air, he has always been able to control the supply of heat, so that in the coldest weather, or in the most sudden changes of requirements the temperature of the hall will not vary half a degree from 63°, the normal temperature.



Longitudinal Section of the HOUSE OF COMMONS, WESTMINSTER PALACE
Showing the System of Ventilation.

Arrangement is also made for adding moisture to the air in cold, dry weather, when the sprays of water would not be suitable. At first water was slowly evaporated from long leaden troughs placed in the lower chamber; but this was accompanied by bad odors, and did not give enough moisture. The present method is very simple. A one-and-a-half-inch brass steam-pipe is run around just inside of the canvas screen. Immediately over this pipe is a one-half inch brass-pipe, from which water is allowed to drip through pin holes at regular intervals. The water drops on to the hot steam-pipe, is vaporized, and passes off into the air. Any surplus water is carried off in a trough which runs beneath. The lower pipe is tinned to prevent oxidization. Hygrometers are placed in various parts of the hall, and by increasing or diminishing the supply of water, the proper state of humidity can be maintained. The chief engineer tells me that this system of supplying moisture to the air, has been used by him in connection with the heating of private mansions, especially at the residence of Krupp, the gun-maker. There the supply of water to the drip-pipe is automatically controlled by an

electric current in connection with an hygrometer, so that any desired degree of humidity can be maintained without requiring constant attention.

The House of Commons is subject to greater fluctuations in attendance than the House of Lords, besides meeting oftener and sitting later than its neighbor. Consequently the problem of ventilation becomes somewhat more complicated.

In winter, the arrangement is essentially the same as that used in heating the upper House, the air entering the basement at the sides, passing through canvas screens into the lower chamber, rising into the mixing-chamber, and from thence passing into the hall through the floor, which is entirely composed of cast-iron grating, covered by wire netting. In the aisles and where members stand when speaking, the floor is covered by a coarse matting. Everywhere else the air is free to rise. Provision is made for very cold weather by placing four radiator-pipes with plates, one above the other, at the intake just outside the canvas screen. The drip and steam pipes for supplying moisture to the air are also placed outside the screen.

In summer weather, and whenever cool air is to be brought into the hall, the arrangement is different. Air is taken from the river terrace, which has the advantage of being easily kept clean, and free from dust; besides it is on the cool side of the building, the sun having passed to the west before the House is assembled. There is a single large duct in the cellar for the intake, the air being moistened by spray jets, and sifted through canvas in the same manner as when drawn from the courts. The air is also cooled when necessary by being passed over ice, which is piled loosely on large wooden racks, so that the air circulates freely about it. Practically very little ice is used, as at most times the spray jets are found to sufficiently reduce the temperature, and London has but few days of excessively warm weather during the sittings of Parliament.

After leaving the ice the air is led through wide passages, and rises into the centre of the hall, by means of a large shaft running up through the heating and mixing chambers. This shaft is separated from the air-chambers by partitions, with doors at each end, and has gratings at each floor level. In winter when air is drawn from the courts, as previously described, these gratings are covered, so that no air passes up unless desired.

To help the upward draught of cold air, a large air-pump is used, which is arranged with double-acting valves, so that fresh air is forced along with each movement of the piston; the capacity of the pump being 1000 cubic feet per stroke. It is usually run at the rate of fifteen strokes per minute. The sketch-plan above shows the arrangement of the pumps and ducts. The two gates at A, are opened, and the air follows the direction of the arrow B, when the pump is not working.

The manner in which the foul air is extracted from the hall is as thorough as the way in which the pure air is introduced. The accompanying section will serve to illustrate this. The ceiling is filled-in with glass panels which are raised, and left quite open all around so that the air can rise freely. Above this ceiling are sixty-four Argand gas-burners which light the hall through the glass. Each burner consumes sixteen feet of gas per hour. The products of combustion are all led off in pipes joining into two main flues which are carried into a high ventilating-shaft at the south-west corner of the room. This shaft has a furnace at the bottom to help the draught, as besides receiving the gas ventilation-pipes, it also ventilates the Reading-Room, the Tea-Room, and the Common's Lobby. All these gas-burners serve to ventilate the House to quite a considerable extent, though they are not relied upon as entirely sufficient for the purpose. The whole of the space immediately over the hall is used as a foul-air chamber. This chamber is connected at the north end to four large shafts, through which the air is led down into the cellar, and along through a wide passage to the base of the clock-tower, whence it passes up and escapes into the atmosphere at a height of about 330 feet. The draught is forced, and regulated by a large coal fire, which is kept burning all the time at the bottom of the tower.

The course of the ventilation can be readily followed by reference to the longitudinal section, the arrows indicating the direction of the current. The air-pump is at the end of the cellar passage to the left. At A is a gate which can be closed when required. The gate at B is closed when the cold air is entering the hall. From this second gate a large pipe carries fresh air along the cellar passage, and up to the reporter's gallery. The four down-cast shafts for foul air are shown at the right by dotted lines, being located at the corners of a large well just to the north of the hall of the House of Commons.

It will be seen that the present ceiling of the Commons has a wide splay all around. The original ceiling was level, but was found to have a bad influence on the acoustic properties. The greater part of the present system of ventilation was put in at the time the change in the ceiling was made. In the House of Lords the ceiling is still level, but the removal of the vitiated air is effected in the same manner, the exhaust-pipes being led into the Victoria Tower.

To prevent any sudden draughts in the hall, a very ingenious device has been resorted to. The fresh air arising from the heating-chamber enters the mixing-chamber through large circular openings, which are covered with iron gratings. Immediately below the grating is hung a cylinder of canvas, like a bag without a bottom, extending down three feet into the lower chamber. When a sudden gust of wind blows into the heating-chamber, or a sudden draught is caused by opening a door or a window, the canvas immediately collapses, closing the orifice, and preventing the draught from being felt in the House, the bag straightening out again as soon as the disturbance has passed. This device has been found to act as a regulator to the air-supply, the canvas contracting more or less, to follow changes in the draught, so that a nearly constant current is maintained.

The House sometimes adjourns from seven to nine in the evening, for dinner. Advantage is taken of this to entirely change the air in the hall, which is done in a very easy and thorough manner. The gate in front of the air-pump is closed. The gate just beyond the up-cast shaft is opened, and the windows of the hall are all opened. This reverses the current, the air coming down into the up-cast shaft, and passing through the cellar-ways directly into the clock-tower. (See the longitudinal section). A few minutes suffice to completely change the air in the hall in this manner, after which the gates are arranged as before, and fresh air, cooled or warmed according to the season, is pumped into the room until the proper temperature is reached.

While the House is sitting men are stationed in various parts of the hall, who keep careful note of the temperature, making written reports every hour which are submitted to the engineer, and preserved for reference. Men are also stationed below in the mixing-chamber, where they can hear everything that goes on in the House, and be ready at any moment to supply more heat or cooler air if necessary. The air in the House is changed from three to six times an hour, according to the need. A thermometer and an anemometer are hung over the openings between the two air-chambers, and are carefully watched, and every precaution taken to prevent sudden changes.

Every thing connected with the ventilation is kept in perfect order. The vaults are always perfectly neat and clean, there are no obscure corners for rats or rubbish; tobacco is never allowed to be used in any form by any of the attendants; the walls and ceilings are thoroughly whitewashed twice a year; the canvas-air screens are washed every week, and indeed every care is taken that thought and money can devise to keep the air-supply perfect in all its ways.

The resident engineer, W. J. Prim, Esq., has a staff of about fifty men constantly employed in attending to the heating, ventilating, and lighting.

C. H. Blackall.

THE NEW ADMIRALTY AND WAR OFFICES.[1]—II.

London, August, 1884.

Statue of the Duke of Wellington, at the General Entrance—Alfred E. Turner Sculpt.

Resuming our notice of this competition, with the design by Messrs. Aston Webb & Bell placed third by the judges, we find it quite different in character from any of the others, both in plan and architectural style. As remarked in our former notice, the plan is distinguished by a great courtyard in the form of a Greek cross. It may generally be described as a single-corridor plan, with arcaded halls like small court-yards at the intersecting angles, one of which is also the principal staircase, as we shall have to notice presently. The plan is eminently picturesque, if that is a virtue in a large public building: it seems to cover far less ground with buildings than any of the others, so that if all the requirements have been provided, as we are assured they are, then it is a marvel of compact and skilful planning. The outlines (in plan) of the great court-yard are if anything too much broken up; but this very fault gives rise to many charming "bits" of design and great play of light and shade. The Whitehall front is recessed in the centre with advanced wings at each end. The principal entrance is in the centre of this front and opens into one of the internal halls above mentioned; another entrance, from the Spring Gardens side, opens into the grand staircase hall, one of the great features of the design. The whole arrangement is remarkably simple, and symmetrical to a degree hardly to be expected in such picturesque grouping. The corridors are fairly well lighted; though not so good in this respect as the first prize design, still great skill is shown throughout the whole work, and it strikes one as being the most economical of the lot.

As might be expected from the previous works of its authors, the elevations have more of the so-called "Queen Anne" character than any other design in the competition. The promise of picturesqueness in the plan is fully borne out in the elevations, in the Park front especially so, though even in this design, as in almost all the others, it is difficult to say that the exterior expresses in any marked manner the arrangements of the interior. For instance, the internal halls are lost sight of altogether; no feature marks their presence, and looking at the exterior, for aught we can tell, they might as well not be there at all. We think this is to be regretted, as they are large enough in themselves to become marked features in the design externally. There are the usual towers rising from nothing in particular, one at the internal angle at the junction of the parallel front

[1] Continued from page 128, No. 455.

and the return to the Horse Guards, and the other at the northeast corner of the Spring Gardens front; but the towers in themselves are rather commonplace productions. The fronts generally have what may be called pavilions at the angles and in the centres, with high, pitched roofs, tall chimney-shafts, and dormer windows. Between these pavilions the frontage line is slightly recessed and arcaded on the ground and first floors. These arcades are charmingly detailed and form interesting features in the composition, assisting in the play of light and shade, and generally adding greatly to the richness of the design. They are useful, also, for over the first floor a mezzanine floor is cleverly introduced in some parts, so that the building is practically five floors high against the four of some other designs, and the first-floor rooms themselves have their heights in proportion to their size and importance, some under the mezzanine, while others, such as those for the Secretary of State for War, the First Lord of the Admiralty, with their ante-rooms, the Commander-in-Chief, etc., are the full height of both floors. This is quite as it should be, and perhaps also accounts for the comparatively moderate space occupied by the buildings on plan. A very able drawing of the interior of the grand staircase hall shows how cleverly this mezzanine floor has been taken advantage of internally. It is one of the best bits of design in the whole competition, and shows great artistic power and feeling for the style employed, albeit the upper stories are somewhat thin and weak.

The whole of the drawings of this set are very well rendered. The perspective of the staircase hall, just referred to, by Mr. Webb, and the view of the Park front by Mr. Bell, are most effectively drawn. There is also a charming little sketch by Mr. Bell, of the proposed new buildings with their surroundings, as seen from St. James Park, in which the group is very cleverly contrasted with the new Foreign Office, and the towers of Westminster Abbey, and the Victoria Tower of the Houses of Parliament, the whole making an exceedingly effective architectural composition. But after all is said and done, picturesque though the design is, it does not rise to the dignity of a great public work. The type of Classic is too free, too "Queen Anne" we may say, for want of a better word, as there can be no doubt that something much more monumental is needed to fulfil the conditions of the problem. The style was almost required to harmonize more or less with the Classic of the Horse Guards, and where it did differ it should have inclined rather to the monumental than the picturesque in such a large building. The authors proposed to use the old Admiralty screen (now fronting Whitehall) and rebuild it northwards and in a line with their park front, but it can hardly be said to be in harmony with either the spirit or the letter of their design, and would probably have been abandoned.

The fourth design we find in our notes, that by Messrs. Hall and Powell, returns to the more official character of Classic, and is in some respects a very striking composition. In plan it is wonderfully like the selected design, having the double-corridor arrangement, with a large quadrangle entered centrally from Whitehall, and two other smaller courts towards the Horse Guards and Spring Gardens sides respectively. The main difference, however, is that, whereas the principal entrances to the two great departments are under the archway from Whitehall in the selected design, they are in the centre of the quadrangle in Messrs. Hall and Powell's plan. The quadrangle is also of better proportion in itself than Messrs. Leeming's; otherwise there is a good deal of sameness about the general arrangement. The centre of the Whitehall front is also somewhat recessed, which is another advantage, to our thinking.

Externally the orders, where used, are confined in height to a single story, a distinctly different treatment from those we have already noticed. There is a considerable knowledge of detail and effective grouping, the character of the work being much better Classic than in the selected design. The internal arrangements, too, are better expressed in the elevations than in most others, for instance, the two low towers covered with domes, which are leading features in the exterior views, rise over the grand entrance-halls of the two great departments, marking each in the most effective manner, though the towers themselves, as such, never rise very much above the commonplace in the matter of design. The south wing is also graduated down towards the low buildings of the Horse Guards in a manner less detrimental to the latter than can be said for either of the designs placed before this one by the judges. And this is not by any means an unimportant point, as we shall probably find when the selected design is built, by the building being lowered considerably on that side, and the lofty campanile most likely cut out altogether or moved to some more suitable portion of the design, there being no reason, as in Messrs. Hall and Powell's case, why it should not rise from any other corner of the structure.

In the design under consideration, the main entrance from Whitehall to the great quadrangle is poor and unimportant in the extreme, a great contrast in this respect to Messrs. Leeming's, where, by carrying the central arch up into the first floor, adorning it with sculpture and enriching the side archways with columns and pediments, an attempt has at all events been made to invest it with a dignity worthy of its importance; whether they have altogether succeeded or not is quite another question, but here, in Hall and Powell's, were it not for the whole centre being recessed, the entrance would be in danger of being lost sight of entirely. For the rest, the Classic is of the ordinary type, suggesting a large block of offices, or of houses in flats, which might be in the West End or in the City, and which one would drive past like any other ordinarily respectable-looking building, without the least idea that there was anything particular to suggest the two great departments of the Navy and the Army of a great Empire.

Of the other designs, after the four we have noticed, the most striking, perhaps, is that by Messrs. Stark and Lindsay. It differs from the rest in plan by having the major-axis of its quadrangle north and south, instead of east and west, with a loop towards Whitehall making it a kind of T-shape on plan. The main entrance is into this loop from Whitehall, but there is also another similar entrance at the north end of the quadrangle from Spring Gardens, while the entrances to the admiralty and the war offices are on the west side of the great courtyard. The double-corridor arrangement is mainly followed in the disposition of the apartments, but without the internal halls which distinguish the plans already noticed. Each department has a grand staircase, however, though scarcely on the magnificent scale of Messrs. Webb and Bell's. The elevations are somewhat of the Louvre type, with high ornamental, too ornamental, roofs. The Park front has a rather picturesque and vigorous-looking tower at either end, between which the sky-line is broken by the high pitched roofs and tall chimney-shafts of a couple of pavilions. And this arrangement is repeated on the return flank towards the parade, the design falling off in richness as it approaches the old building of the Horse Guards. The pavilions have also highly ornamental dormers, which are repeated still more elaborately in the towers; the upper stories of the latter are open, enriched with columns, and covered with domical roofs, forming, as it were, low campaniles. The whole design is treated with considerable richness throughout, with much florid detail and ill-studied ornament. The basement and ground floors are rusticated; the first and second floors have coupled columns between each pair of windows, the order being the height of one floor only in each case. The view of the building towards the Park and the Parade is perhaps the most striking, the small scale of the orders and the detail generally giving it an appearance of great size. The drawing is rather unequal throughout.

Messrs. Maxwell and Tuke send a pretentious but weak Classic design, full of towers, and domes, and what not, two of them being planted close up to the Horse Guards, so as to dwarf the old building completely. The elevations are drawn in a slipshod style, and this also applies to the perspectives.

The designs by Messrs. Spalding and Auld and Mr. Thomas Porter are also Classic of the poorest description, and the less said about them the better: in the words of the old rhyme: —

> "It isn't that the things ain't rich and rare;
> One wonders how the Devil they got there!"

And the same might be said of that Gothic wonder by Messrs. Glover and Salter, which in style is a kind of cross between poor Burges's design for the New Law Courts and Messrs. Mappin and Webb's warehouse, at the corner of Queen Victoria Street, in the City. We think it was almost a cruelty to have asked these gentlemen to send in the large-scale drawings of the second competition, when it must have been perfectly well known from their sketch designs there was no earthly chance of their being accepted. Shades of Scott and Street and Burges, what a falling-off is here! It has often been asserted of late that the New Law Courts is the last great building of the Gothic revival: there will now be no mistake about it, if this is what the style has come down to. What a melancholy waste of time the whole thing is! Let us forget it all as quickly as possible.

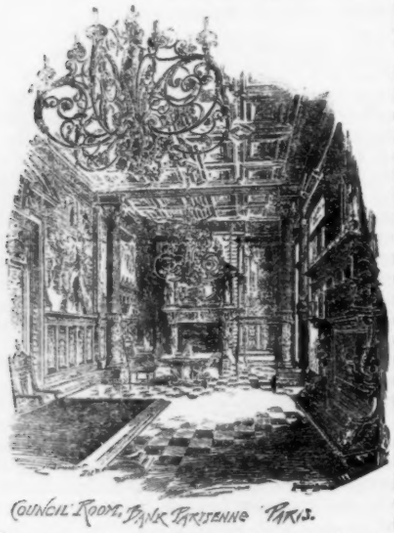
Thus the latest great competition is finished. We understand the Government have confirmed the award of the judges, and that Messrs. Leeming and Leeming have been formally appointed architects for the new buildings. As we have said, nothing can be more satisfactory than the business-like manner in which the competition has been carried through. Whether it would not have been wiser and better, in the interests of art, to have had a selected competition of the best and most experienced men in the profession is altogether another question. The powers that be evidently thought otherwise, and Mr. Shaw-Lefevre has been as good as his word. We are left with the result of months of study and work, to make the best of it as far as this is now possible. The outlook is not very cheering, to be sure, but there is nothing for it but to put the best face on it we can, and hope the future will bring us something better and nobler than we are promised in the present.

As a display of architectural design, considered from a fine-art point of view only, the competition has been more or less a failure. We are told the successful men were fifth in the Glasgow Town-Hall competition; be this as it may, that is about the relative position the whole lot bear to what was done at Glasgow. Not one of the designs comes within even a measurable distance of the selected design at Glasgow, not to speak of several others which ran it very close for first place. Neither in the grasp of the subject as a great national building, as an architectural composition of the highest class, nor in the display of knowledge of Classic work as such, do any of the designs approach the best work shown in the two competitions we originally mentioned, viz., the Oratory Church at Brompton, and the Town-Hall at Glasgow, and, considering the proposed new buildings are supposed to be a work of far greater importance than either of those, and that the competition came after them in point of time, the result, artistically considered, can only be looked upon as a retrogression, where we had every right to expect and almost to require, a decided advance. What are great national monuments for but to display the highest and noblest art we are capable of as a nation? From what are we to be judged hereafter, as artists, but these very

monuments? More than this, a national work of this kind is more or less a school for the time being, and it is essential for our best interests as artists that nothing but what is highest and noblest, or at all events the highest and noblest that the best amongst us can give, should be taught in such an enduring object-lesson. And still further, English Classic has noble examples to emulate, and noble traditions to hand on unsullied to those who may come after us. It is therefore of the first importance that our record should be pure. Viewed in the light of all this, we are compelled to acknowledge the results before us as in the highest degree disappointing, and we venture to think the national interests would have been far wiser and better served had the judges frankly confessed that none of the designs reached that high standard of artistic merit that would justify their acceptance for execution, but that rather they should have paid the nine competitors their hardly-earned premiums, and begun *de novo* with a selection of half-a-dozen of the most accomplished men in the profession. Judged by results, the open competition in this case has been a mistake; it has not given us the best we can get, though that best is to be had for the seeking. With all respect for the honorable intentions of our honorable First Commissioner of Works, there is a higher standpoint still, a determination to secure only the best for the nation, and having manifestly failed to obtain it in one way, to set about more diligently to find it in another.

We have purposely avoided the question of the relative merits of an open or close competition as an initial proceeding, considering the matter closed by the adoption of the former, and that we were bound to await the issue; but now that the result is as unsatisfactory as it well could be, we cannot see where the injustice of resorting to the latter could now arise; we hold it the wiser course to frankly acknowledge our failure, rather than to perpetuate what we know to be a blunder. Probably we may be told it is all a matter of taste. Some may consider the selected design a work of very high art. The only answer we can now give is that it is not a matter of taste at all, or of what this one or that one may think; it is a question of absolute knowledge, as demonstrable as any other fact, but that to pursue the subject farther at present would lead us too far out of the region of criticism.

MOSCOW'S NEW CATHEDRAL.



THE new Cathedral at Moscow, writes a correspondent of the *Times*, is one of the most remarkable churches in Europe. Not many cathedrals can boast of having been built in one lifetime, but there are Russians still living who saw the French army depart from Moscow, to commemorate which event the Church of St. Saviour has been erected. In less than three months after the retreat of the foe, a decree went forth from Alexander I, that a memorial temple should be built, and five years later, the foundations were laid; but not on the present site. The Emperor accepted plans, which had they been carried out, would have given to Russia the highest building in the world, namely, 770 feet, the site being on the Sparrow Hill, between the routes of the entrance and departure of Napoleon, but the undertaking for a while collapsed, and the architect and building-committee, after expending or misappropriating in ten years upwards of four millions of roubles, were banished, and their estates confiscated. The Emperor Nicholas adopted new plans, and chose the present site, which has cost with embankment, terrace, etc., upwards of £180,000, and whence, at the onset, a nunnery had to be removed, and 70,000 cubic feet of earth to be displaced, before, on the 27th July, 1838, the laying of the foundations was commenced. The building continued slowly to rise for twenty years, and in 1858 the scaffolding was removed, this latter item alone having cost 277,000 roubles, or upwards of £40,000 (reckoning the rouble, that is, at 3*s.*, as throughout this letter). A quarter of a century more has been expended on fittings and decoration. The style is ancient Russian, or rather Græco-Byzantine, the most striking feature of which, to a Western eye, on the exterior is the five copper cupolas, for the gilding of which were required 900 lbs. of gold, their total cost being upwards of £170,000. The domes are surmounted by crosses, the central one nearly 30 feet high, standing 340 feet from the ground. The building covers an area of 73,000 square feet. The bells, as usual in Russia, are of ponderous weight. The largest, or "holy-day" bell, weighs twenty-six tons, or half as much again as "Great Paul." Even the second, or "Sunday" bell is within a ton's weight of our bantling; while the smallest of the "every-day" bells descends to about 30 lbs. The cost of the peal was upwards of £13,000.

The foundations of the church are of Finnish granite, and the whole edifice is faced with marble, the doors being of bronze, ornamented with Biblical subjects, and lined with oak. The principal entrance measures 30 feet high by 18 feet broad, and the two doors weigh thirteen tons, the total cost of all the doors being £62,000. Thus, it will be allowed that many of the features of St. Saviour's are produced on a magnificent scale, though one familiar with the spire of St. Stephen's, Vienna, or that of Salisbury, the west front of York Minster, or that of Amiens, might hesitate to pronounce the effect of the exterior of St. Saviour's beautiful. As to the interior, there can be, I think, little difference of opinion. I have seen most of the celebrated cathedrals in Europe (with the exception of those of Spain), but in its way I know of nothing so exquisite as the interior of St. Saviour's at Moscow. The building is erected in the form of a Greek cross, three of the broad ends of which form corridors, lower and upper, surrounding three sides of, and open to, the central square or temple proper, while the fourth end is occupied by the altar and its appurtenances. The upper corridor reminded me of the galleries in Santa Sophia at Constantinople. The walls are adorned with frescos illustrating principal events in the history of the Russian Church. The walls of the lower corridor or "procession gallery" are adorned with paintings commemorative of the battles of 1812.

But it is when one stands in the temple proper, and looks above and around that the gorgeousness of the building is so striking. The floor of this part is 220 feet square, the length of the cross either way 270 feet, and the height from the ground to the cupola measures 230 feet. The floor is of marble, and the walls are lined with exquisite varieties of the same material. It was intended at first to use only Russian marble, but some amount of Italian was subsequently found to be indispensable. The total cost of all the marble in the building exceeded £300,000. Lifting one's eyes, the galleries are seen to contain thirty-six windows, and the cupola sixteen, all of which are double, with frames of bronze. Round the cupola is one row of 640 candelabra, placed there at a cost of £27,000, with a second row of 600, costing an additional £12,000. There are four lustres weighing four tons each, and the total number of candles to be lighted throughout the building is upwards of 3,000. At the top of the cupola is a painting by Professor Markoff that will freely shock the principles of Westerns, who object to the use of pictures in worship. It represents in colossal proportions the first person of the Blessed Trinity as an old man with the infant Jesus. The height of the figure is 49 feet, the length of the face 7 feet, and the height of the infant 21 feet. Also, below the cupola are a number of figures of Apostles and Fathers, each 21 feet high. Great expense has of course been lavished on the eastern end of the church. The cost of materials and workmanship for the altar-space, apart from the *icons* or sacred pictures, amounted to £36,000. In this part of the church are some of its most remarkable paintings, most, if not all, by Russian artists. They are too numerous to particularize. I remarked, however, a striking picture of Sergius blessing Demetrius of the Don. I see from my notes that "The Last Supper," by Semigratzky, and eleven pictures by Verestchagin attracted my attention. The structure of the altar-screen is a departure from the traditional Russian type, for instead of a tall, ugly, blank partition, half or two-thirds of the height of the church, hiding the eastern end, the screen of St. Saviour's is low and elegant, and throws open, except for a few feet above the floor, the whole of the sanctuary. But a more marked, and, as some would think, unorthodox departure from the customs of the Russian Church is the construction of the altars. I am under the impression, gathered, I think, from the work of the learned Dr. Neale on the Eastern Church, that the "holy table" in the Russian Church should be always of wood, whereas in St. Saviour's I saw two at least constructed of blocks of polished marble, the semblance of a table being given to each by a moveable inch board of cypress wood laid on the top. Much of the ornamentation of the sanctuary and its furniture was exceedingly beautiful, notably some enamelled candelabra by Klebnikoff. But perhaps I have sufficiently described this princely cathedral, erected at a cost of two and a quarter millions of pounds sterling, said to be capable of accommodating 10,000 worshippers, and which from its first conception has been built, as I have said, in a single lifetime.

THE ILLUSTRATIONS.

CHURCH OF ST. JAQUES AT DIEPPE.[1]

THE church of St. Jaques is the largest and considerably the most interesting of the two parochial churches of the place. It had the singular good fortune of escaping, together with the castle, nearly uninjured from the bombardment, during the reign of our third William, which laid the town in ashes. It was begun about the year 1260, but was little advanced at the commencement of the following century; nor were its western chapels, the works of the piety of individuals, completed before 1350. The roof of the choir remained imperfect till nearly ninety years afterwards, while that of the transept is as recent as 1628. Thus it is a valuable specimen of the ecclesiastical architecture of successive ages. In the lines of the transepts are traces of the early pointed style, apparently coeval with the church at Eu; the friezes are ornamented with small pierced

[1] From Cotman's "*Antiquities of Normandy.*"

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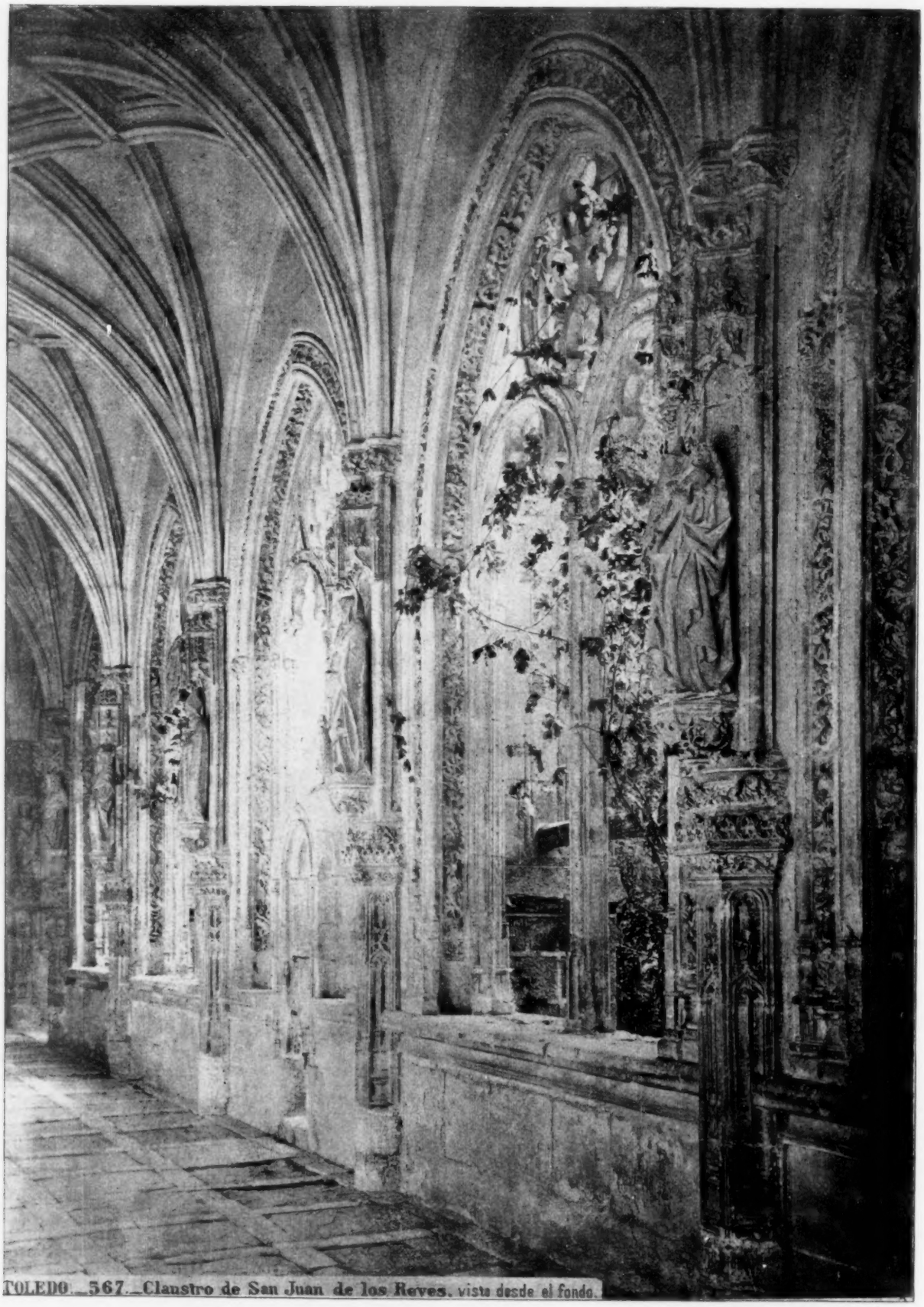

TOLEDO.—567.—Claustro de San Juan de los Reyes, vista desde el fondo.

PHOTO CAUSTIC. HELIOTYPE PRINTING CO. BOSTON.

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Revd. A. E. Tortat, Rector

Memorial Church ✣ Gettysburg Penna.

✣ to be erected in memory of the Country's Dead ✣

J. A. Dempwolf, Architect, York, Pa.

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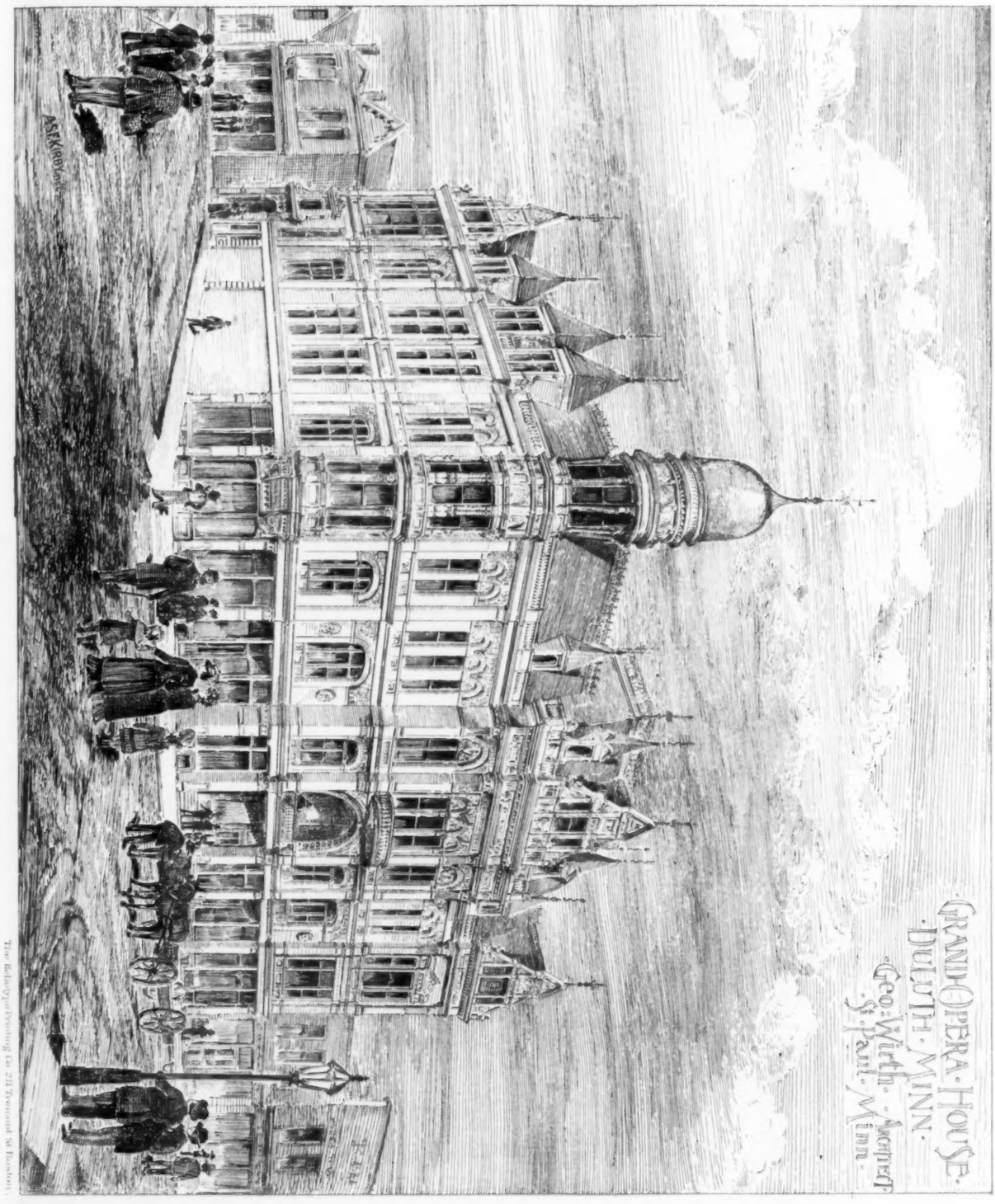

GRAND OPERA HOUSE.
DULUTH, MINN.
Geo. Wirth, Architect
St. Paul, Minn.

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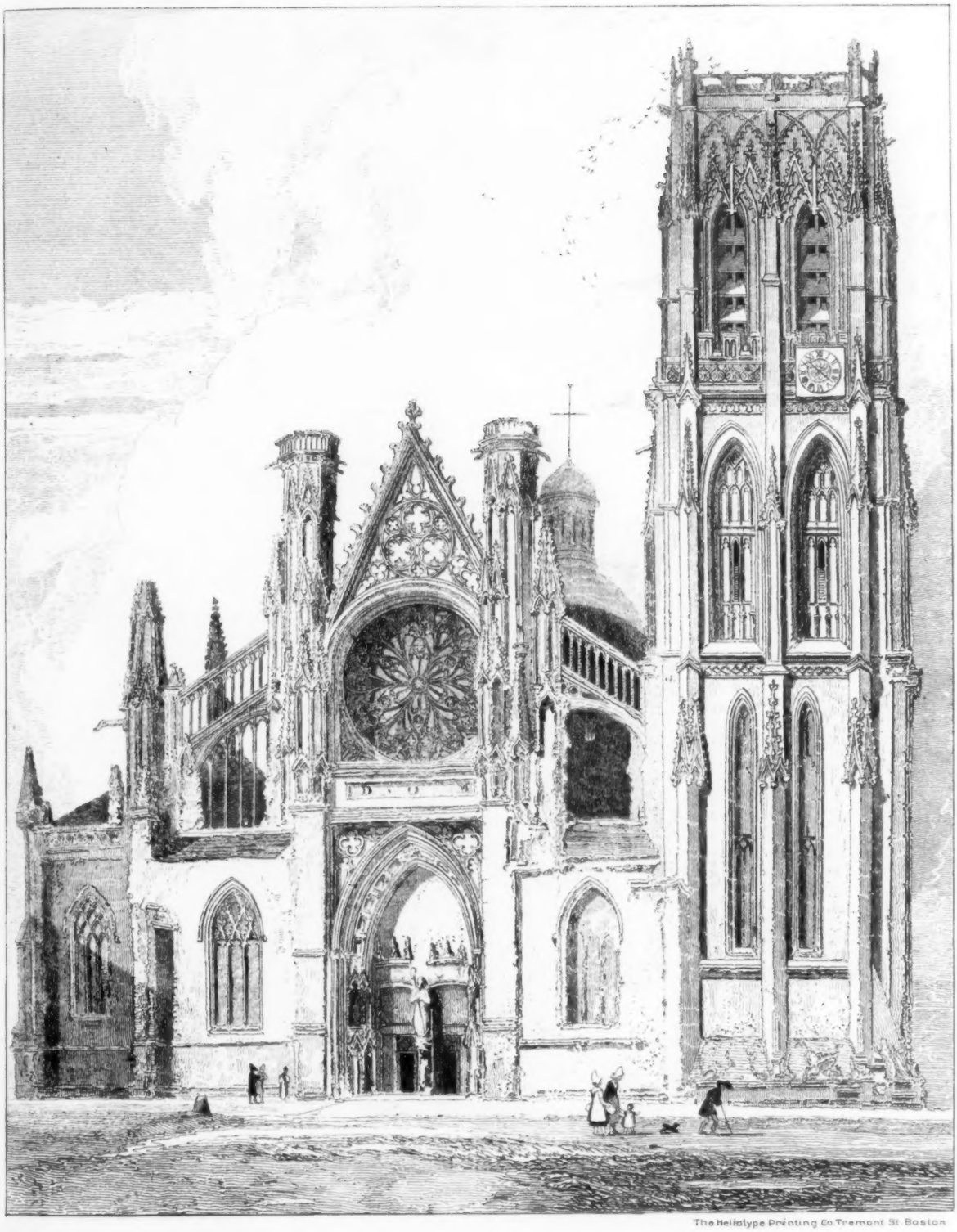

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CHURCH OF ST. JACQUES, AT DIEPPE.

quarterfoils, as in that building, and the portals now mutilated are in the same style. The nave is of much later date, and the vaulting, though Gothic, is intermixed with Grecian members and scrolls. The triforium in the choir is filled with elegant Perpendicular tracery. The Lady Chapel is perhaps one of the last specimens of Gothic art, but still very pure, except in some of the smaller members, such as the niches in the tabernacles, which end in scollop-shells, instead of terminating with a groined canopy. The bosses of the groined roof are of the most delicate filigree work, and the vaulting is also ornamented with knots pendant from the ribs. The panel-work round the chapel takes circular terminations in each panel, but filled within with an elegant tracery terminating with the acanthus. The windows of the chapel are acutely pointed; the horizontal mullions (an unusual feature in French architecture) are ornamented on the outside of the ovals. The nave is supported by flying-buttresses, each filled with tracery of eight mullions. The tower at the south angle of the west front is lofty and in the Perpendicular style. In the north aisle of the choir is an elegant screen, which probably incloses a chantry-chapel, and, like the Lady-Chapel, exhibits a singular mixture of pointed forms, interspersed with Roman members; parts of it resemble the tomb of Bishop Fox, at Winchester.

MEMORIAL CHURCH, GETTYSBURG, PA. MR. J. A. DEMPWOLF, ARCHITECT, YORK, PA.

THIS church, dedicated to the Prince of Peace, is intended to be erected as a special memorial of those gallant defenders of their country, who fell in the famous battle. The material it is proposed to employ is a rich gray granite, extensive beds of which exist on the battle-fields. The interior face of the tower (which contains a spiral iron staircase), will be lined with the same granite polished, and on the stones of the outer faces of walls, as well as the polished interior of tower will be inscribed the names of those whose friends may wish to honor them in this manner. The interior walls of the church, will be lined with English tiles interspersed with memorial tablets. The wood finish of the interior will be oak, including an open-timber roof of the same material. All the windows will be memorials in stained-glass. The twelve columns will be of polished granite, and commemorative of the twelve great battles of the war.

"THE GRAND OPERA-HOUSE, DULUTH." MR. GEORGE WIRTH, ARCHITECT, ST. PAUL, MINN.

BUILT by Messrs. Munger & Markell, at a cost of $100,000. The size of building is 120′ x 150′; size of audience-room, 54′ x 80′; size of stage, 34′ x 50′. It has a seating capacity for 1,200. The building is faced with pressed-brick, moulded-brick from Chicago, and terra-cotta from Boston. The acoustics and ventilation are excellent. A number of stores and offices occupy part of the building.

CLOISTER OF SAN JUAN DE LOS REYES, TOLEDO, SPAIN.

FOR a description, see the *American Architect* for January 26, 1884, page 40.

VENTILATION IN CONNECTION WITH WARMTH AND LIGHTING.[1]

IN this lecture I propose to endeavor to explain what are the principles which should guide us in warming our houses, and then to endeavor to show how those principles can be usefully employed in practice. We must all agree that our present arrangements are inconvenient in certain respects, so far as our towns are concerned. When we bring a large number of houses together, as we do in our great cities, the methods which we adopt for warming our houses conduce to the production of a very large amount of smoke and pollution of the atmosphere. The amount of coal which we burn is out of all proportion to the heat which we produce. Therefore, in our towns, the methods to which we resort for warming our rooms load with impurities the air which we have to breathe. Those who have been born and have lived in the heart of London do not know what the feeling is of breathing fresh invigorating country air. The question is: how can we alter this? The first step towards alteration is to know what conditions we want to obtain. We will consider, in the first place, what advantages our present methods of warming secure for us; and next, how we can secure these in ways less hurtful to our atmosphere.

The open fire is the most favorite method of warming. So far as the production of heat is concerned, it is also the most wasteful. One pound of coal is more than sufficient, if all the heat of combustion is utilized, to raise the temperature of a room twenty feet square and twelve feet high, to ten degrees above the temperature of the outer air. If the room were not ventilated at all, and the walls were composed of non-conducting materials, the consumption of fuel to maintain this temperature would be very small; but we must change the air of the room if we are to live in it, or else the act of breathing would render the air so impure that we should die. The air which passes out of the room to make way for fresh air is warm, and carries some heat with it; the fresh air which comes in, if cold, absorbs heat, which brings up its temperature to that of the room. All this entails a development of additional heat. For instance, if the volume of air contained in the room above mentioned were changed every hour, one pound of coal additional would be required per hour to heat the inflowing air, so that to maintain the temperature at ten degrees above that of the outer air during twelve hours would require twelve pounds of coal. Besides this, there is a continual escape of heat going on through the walls, windows, ceiling, etc., and thus the mere circumstances of occupation of a room entail a greater consumption of fuel than the mere one pound of coal in order to maintain the temperature. But the open fire consumes much more than would be necessary to keep up the heat. The principle of the ordinary open fireplace is that the coal shall be placed in a grate, to which air is admitted from the bottom and sides to aid in the combustion of the coal, and an ordinary fireplace, for a room of twenty feet square and twelve feet high, will contain from about fifteen pounds to twenty pounds at a time, and if the fire be kept up for twelve hours, probably the consumption will be about one hundred pounds, or the consumption may be assumed at about eight pounds of coal an hour. But the consumption of fuel enables the open fire to perform other functions besides those of warming. It is a great engine of ventilation. One pound of coal may be assumed to require, for its perfect combustion, 160 cubic feet of atmospheric air; eight pounds would require 1,280 cubic feet; but at a very low computation of the velocity of the gases in an ordinary chimney-flue the air would pass up the chimney at a rate of from four feet to six feet per second, or from 14,000 to 20,000 cubic feet per hour; with the chimneys in ordinary use, a velocity of from ten feet to fifteen feet per second often prevails, giving an outflow of air of from 35,000 to 40,000 cubic feet per hour.

We have therefore to consider the open fire in two aspects: 1, as a method of warming; 2, as an engine of ventilation. In its aspect of warming, the radiant heat from the fire does not warm the air of the room; the rays from the fire warm the sides and back and parts adjacent to the grate; they warm the walls, floor, ceiling, and the furniture of the room, and these impart heat to the air. The form and material of the fireplace can thus assist materially the warming of the air. The rays should impinge more freely on the walls and floor than on the ceiling. A projecting chimney-piece, with a surface favorable to the absorption and emission of heat would be more favorable to the warming and circulation of the air than one which would allow the rays to pass to the ceiling. In an ordinary fireplace the sides should be splayed, as in the Rumford form of grate; the sides and back should be of non-conducting material, with a surface favorable to the rapid absorption and emission of heat. Thus brick or tiles are better than iron for this purpose. Similarly, the degree to which the materials of the walls or floor of the room are unfavorable to conduction, but favorable to the absorption and emission of heat, will have a bearing on the capacity of the room for warmth. The open fire, moreover, has this advantage: that a person can obtain just as much or as little heat as he desires by placing himself in front of the fire or at the side. There is, however, this inconvenience about the open fire: the large volume of air drawn out of a room by the chimney must be supplied from somewhere, and consequently the very means adopted to heat the room tends to produce draughts, because the stronger the direct radiation, or rather the brighter the flame, in open fireplaces, the stronger must be the draught of the fire and the abstraction of heat.

Let us next consider what are the conditions which we require for comfort. The normal temperature of the human body is 98° Fahrenheit. If it rises much above or falls much below that, death will ensue. But the human body is a furnace in which the process of combustion is continually going on; therefore, in order to preserve the normal temperature, the body must continually give off a certain amount of heat. By the laws of radiation, a heated body parts with its heat more or less rapidly in proportion to the low or high temperature of bodies near it. Thus, if a hot body be placed near a cold body, the hot body will radiate heat rapidly; if the hot body be near a body less hot than itself, but still hot, it will part with its temperature slowly. Let us apply this to a room. If you are sitting in a room near a cold brick wall, you feel what you think is a draught. It is not necessarily a draught at all; but the side of your warm body turned next the wall parts with its heat rapidly, and you experience a local chill. If you hang a piece of carpet against the wall, the draught is no longer felt, because the carpet checks the rapidity of the radiation. Now, the chief source of heat in the open fire is its radiant heat, and as it warms the walls of the room and the furniture, it takes off any sensation of chill from the walls, etc., although the air may be comparatively cool. You must next bear in mind that the proportion of radiant heat to the total heat given out by a heated body depends on the temperature of the body. Thus, with a red-hot piece of iron, or a flame, the great part of the heat given out is radiant heat; whereas, with a body heated from 150° to 200°, like a hot-water pipe, a comparatively small proportion is radiant heat. Therefore, when you heat a room by means of hot-water pipes, or by means of warmed air, the walls do not get warmed in the same proportion, and although the air may feel warm, the walls may remain

[1] A paper by Capt. Douglas Galton, C. B., LL. D., F. R. S., read at a Conference at the International Health Exhibition, and published in the *Architect*.

cold, so that the heat of the body may be radiated to the walls and give the sensation of chill.

I confess that personally I think there is nothing to be compared with what my friend, Sir F. Bramwell, calls the pleasant, pokeable fire; but I do feel most strongly that, however much private feelings may incline us all to use the open fire, it is our duty, now that our towns are becoming so vast, to adopt some method of heating which will produce less smoke. It is not as if there were any probable and early limit to the size of London or of other large towns. They grow continuously, and London has progressed at the same steady rate since the beginning of this century. In 1851 it contained a little over two million inhabitants, and was looked upon as vast and abnormal; it now contains four million, and is steadily increasing. The smoke destroys our light, it injures our air, it ruins our furniture, our pictures, our decorations, and with the increase of London this must go on in an accelerating ratio. But it requires education in the people to get rid of it. The Smoke Abatement Society, under the chairmanship of Mr. Ernest Hart, sounded the first note against this gigantic evil. In response to the demand then made, many new forms of fireplace were proposed; but the practical conclusion to be derived from that exhibition was that so long as we burn our fuel in the raw state in our rooms and in our kitchens, we cannot get rid of smoke. The main object of the present exhibition is to educate the people in the science of health. The public has long felt the want of pure water, and has obtained a supply of comparatively pure water in the metropolis. The public has not yet become fully alive to the necessity of pure air. It is our business at this exhibition to endeavor to awaken the public mind to this want. So far as purity of air depends on removal of refuse from our midst, there is hope that in that respect this object may be attained, although no doubt even this simple question is much neglected. Dust is generally removed in open baskets and emptied into open carts, in a manner which seems to have been designed for the purpose of scattering it as much as possible into the surrounding atmosphere. But the purity of air which depends upon the absence of smoke is another matter, and I fear that it will be many years before the selfishness of the community will give way on this point.

The first point to consider is, if we dispense with the use of the open fire, how can we obtain that comfort which the open fireplace gives. The comfort of the open fire is due to the warmth it imparts to the floor, the walls, and the furniture. The air of the room is warmed, not by the rays from the fire, but by the warmth imparted by those rays to those various objects. Therefore the air of the room is somewhat cooler than the walls. Now there is undoubtedly greater exhilaration produced by breathing cool air than by breathing warm air. This is readily accounted for. One cubic foot of cold air at 32° Fahrenheit contains more oxygen than one cubic foot of expanded warmer air at 32° Fahrenheit does. It is thus desirable that air admitted to a room should not exceed from 55° to 60° temperature, for comfort in breathing. This will at once explain to you why the employment of warmed air alone to warm your houses does not give comfort. If the warmed air is admitted at a comfortable temperature for breathing, viz., about 55°, the walls, which derive their heat from the air, will be somewhat below that temperature. The discomfort is caused by the warm body radiating its heat too rapidly to the colder walls. Therefore, if you are to abandon the open fire, but retain its comfort, you must warm the walls and floors, etc., of your rooms. If you can maintain your walls, floors and ceilings at a temperature of from 55° to 65°, combined with an adequate change of air, you will not experience much inconvenience from the loss of the open fire, however much you may regret its companionship and its pokeableness.

There are four ways in which we may effect this. In three of these ways one fire in each house in a central position would be used. In the fourth the heat would be applied in the room itself by means of gas. It is probable, however, that a combined arrangement would be desirable. In all the cases where the heat is furnished from one fire, this fire would be in a close furnace for warming each house or self-contained block of buildings, and thus the fire could be so arranged by means of self-feeding apparatus as to be practically smokeless. The heat from the fire would be conveyed to the various parts of the building by hot air, hot water, or steam. Where warmed air is used it would be necessary to adapt the house in its original construction to the purpose, because the air would have to flow up, through spaces in the walls, from the basement. Moreover, it would not be economical to bring up the air in the outside walls, because then nearly half the heat would pass direct to the outer air. The warmed air passing up the central walls of the house would part with some of its heat to the walls, and would thus enter the room at a lower temperature than that of the walls. In order to draw up the warm air into the rooms, it would be necessary to have some means of extracting the air from the room, so as to draw in the warmed air. It would not always flow in of itself in this country. Thus you see that the warming by means of fresh air involves ventilation, and moreover requires, if it is to be thoroughly efficient, that your architect should have thought out the whole problem when he first plans the house, and before you build it; otherwise you are met with difficulties at every turn. In the method of heating by hot air alone you have this further consideration: the air in the heating-chamber is necessarily at a given temperature, and your house is thus heated uniformly; but it may happen, in this climate especially, that you may want one room to be warm whilst another is cool. It is generally on this account that other methods of heating have been preferred. It is to these methods of heating that I would now direct your attention. These methods are hot-water pipes, or steam-pipes, led from the fire, which is placed in some central position, and arranged to accumulate the heat in those rooms or other places which it is desired to heat.

I will at once say that the arrangements hitherto made of warming by either hot-water pipes or steam-pipes have not fulfilled the conditions I have mentioned as being necessary to supply the comfort of the open fire. The method adopted is to accumulate a certain amount of heating surface in a coil or nest of pipes, or in what is termed a "radiator" in the United States; but the plan of distributing the heat by means of a large flat surface placed close to the wall has been generally adopted. I do not wish to imply that it has not been thought of, because some few years ago, in an exhibition of sanitary appliances held at the Society of Arts, Mr. Pritchett, of Bishop's Stortford, suggested something of the sort. The apparatus consists of a series of receptacles or cases for water. The cases themselves were formed of ordinary plates of corrugated metal, strongly put together, but having a small interval between them so as to unroll the water, as it were, into a film, and form a succession of reservoirs of water, about thirty inches in height, more or less, as is required, but only from one-third inch to one inch in thickness, enabling them, therefore, to be placed continuously as a dado, or as a series of panels, round any room or building intended to be warmed, and occupying scarcely any appreciable portion of the space of the room or building. The corrugated form given to these reservoirs not only increases the area of the external surfaces, back and front, and imparts strength to the vessels, but secures a certain amount of friction in the action of the warmed water within the vessels, which predisposes it to part with its heat during its circulation. I have never seen this applied in practice on a large scale. These panels might conveniently form the dado of a room, and, if of six feet high, would insure the comfort of the occupants of the room, as they would effectually prevent persons in the room from radiating the heat from their persons to the surrounding walls. Such panels all round the room would especially lend themselves to warming fresh air to be admitted into the room. Mr. Pritchett proposed that these should be warmed by the circulation of hot water; but it is certain that it would be more advantageous to employ steam to heat them if they were established on a large scale. In England steam is not much employed for heating. We are prejudiced against it; we fear accidents. It is, however, a method of conveying heat which is eminently suited to use on a large scale, and if we are to hope to abolish our smoke nuisance, it is by methods of heating on a large scale only that we may succeed. Steam heating is extremely simple in its application. Steam is easily led to great distances. Steam-heated pipes are hotter than hot-water pipes, therefore their effect in warming the air in contact with them is also greater; and therefore, when heating is required on a large scale, it will be found that it is more economical to use steam-pipes than hot-water pipes; besides which the pipes may be smaller, and thus in both ways expense is saved. Highly heated steam-pipes, moreover, radiate a large portion of their heat to the walls and furniture of a room.

Heating by steam is universal in the United States, and the usual system may be described as follows: The steam is conveyed from the basement, along pipes, to the room or passage where it is wanted to be used, and there it is passed into a cluster or coil of pipes called a radiator, which gives an enlarged heating-surface. The cause producing the circulation throughout the pipes of the warming apparatus is solely the difference of pressure which results from the more or less rapid condensation of the steam in contact with the radiating surfaces; a partial vacuum of greater or less amount is thereby formed within the radiating portions of the apparatus, and the column of steam or of water equivalent to this diminution of pressure constitutes the effective head producing the flow of steam from the boiler; while the return current of condensed water is determined by the downward inclination of the pipes for the return course. Therefore, the flow-pipe should be carried in as direct a line as possible from the boiler to the highest point; all the coils for heating should be placed on the return pipe, which should be laid in a uniformly descending line back to the boiler, so arranged as to prevent the lodgement of any condensed water on its way there; because if condensed water lodges in the pipes, most unpleasant and startling noises result. It is a source of economy in steam heating that the condensed water should flow back to the boiler. This is what is called close circulation, with separate supply and return mains, both of which extend to the farthest distance to which the heat has to be distributed. It is, however, possible to carry the steam and bring back the condensed water by means of a single main, which answers at once for both the supply and the return, either with or without a longitudinal partition inside it for separating the outward current of steam supply from the return current of condensed water. If more convenient, the return of the condensed water to the boilers may be dispensed with, and the steam may be applied in what is called the system of open circulation, where a supply-main conveys the steam to the radiating surfaces, whence a return main conducts the condensed water either into an open tank for feeding the boiler, or into a drain to run to waste, or for use as hot water, the boiler being then fed from some other source; in either case suitable traps have to be provided on the return main, for preserving the steam pressure within the supply main and radiators.

The difficulty of steam heating lies in regulating the temperature

of the pipes. With hot water you can have your pipes heated to anything you like, from 50° to 180°; but with steam-pipes it is different. The heat is got up very rapidly when the steam is turned on, and goes off very rapidly when turned off. There are various arrangements for regulating steam heating when applied to warm inflowing air. In the New York Hospital the incoming air is warmed by coils of steam-pipes, and generally to a considerable temperature; but in order to prevent the warmed air entering the wards at too high a temperature, this hot air is passed into a mixing-chamber, to which cold air can be admitted at will, so that the hot air can be mixed with cold air to the extent necessary to moderate its temperature before it is allowed to flow into the wards. There is, however, one great advantage possessed by coils of steam-heated pipes: they give out a larger proportion of radiant heat to the walls than is given by hot-water pipes. You can easily understand how much simpler it would be to warm Mr. Pritchett's dados and wall-panelling by steam-pipes carried through them instead of by hot water.

The next way in which heat can be applied is by means of gas. A gas-jet warms any surface in contact with it. If, therefore, you enclose a gas-jet in a metal case, and if you bring air to feed the gas-burner from the outer air, and carry away the products of combustion also to the outer air, you can use the heat of the metal case to warm the surrounding air in the room, whilst the fumes of combustion from the gas will be taken outside and do no harm to the air of the room. Gas-jets might thus be applied with the greatest ease to warm Mr. Pritchett's dados and wall-panels, the gas-jets being placed inside the dado, and the products of combustion carried to the outer air. Mr. Boyle has invented a very efficient method of applying gas to warm inflowing air at an ordinary ventilator; it is in use at the Guildhall. The fresh-air inlet has placed in it a pipe which is coiled round. A gas-burner is placed at the bottom of the pipe, separate from the air of the room; the products of combustion pass up the coiled pipe and then down and out to the open air, the pipe being warmed by the heat they give out in their passage, and the fresh inflowing air being warmed by the pipe. Of course, in all these arrangements air must be extracted by flues or fans or some other method, so as to insure a due circulation of air. But however advantageous gas may be in the methods of its application to warming, and I do not hesitate to say that it can be easily applied so as to be hygienically perfect in that respect, you can, moreover, apply your heat at the exact point at which you want it. You can so arrange it as to give out a low degree of heat for warming fresh inflowing air, or to give out heat to warm your dados and prevent your own body losing its natural heat too rapidly by radiation; or you can use it to give out a high degree of heat, and thus to furnish radiant heat to warm you by direct radiation. It has only to be carefully adjusted to produce all these advantages, yet there is this enormous drawback to its use: at the price of 3*s.* 6*d.* a thousand cubic feet, it would cost to effect these things about four times the price of coal. I believe that if it could be supplied so as not to exceed double the price of coal, it might be economical to use it, because you can use it when and where you desire it. You can turn it off when you leave your room, and turn it on again when you return, and in this climate, where our changes of temperature in winter are so rapid, a uniform heat applied everywhere often becomes oppressive.

Let us consider for a few minutes what is the meaning of revolutionizing the methods of warming our houses in the way I now propose. We should not load our atmosphere with soot. Each of the fires in a house requires its separate chimney, and as if the householder were determined to do all in his power to make the atmosphere impure, smoke which is arrested in the chimney-flue in the form of soot is periodically pushed up out at the top of the chimney into the air, not only to the detriment of the occupier of the house, but to that of the neighbors — an arrangement which may be witnessed any morning in houses where chimneys are being swept. These inconveniences result from having separate fires in every house, and for each separate object. Let us consider for a moment the amount of labor and expense entailed by the mere supply of fuel upon this separate system. Take, as an example, one house of moderate size. The consumption of coal at a low calculation will be twenty-four tons a year, which would require twelve carts to convey it to the houses; or a street such as Eaton Place would require twelve thousand carts to supply it with coal. These carts entail the presence of between two thousand and three thousand horses, and each horse causes, by the manure it deposits in the street, an additional pollution of our atmosphere. When the coal is placed in the house, these twenty-four tons require to be carried up in coal-scuttles, each holding probably a quarter of a hundredweight. That is to say, that there would be to be carried from the cellar to various parts of the house nearly two thousand coal-scuttles full of coal. The residue would have to be carried down again in the shape of ashes, probably to the extent of four hundred coal-scuttles, independently of the proportion of ashes which get scattered from the fireplace about the room, and have to be cleaned up by the housemaid. In addition to this, the dirt engendered by the smoke and soot sent up into the atmosphere renders much additional cleaning necessary, and entails on the inhabitants of London a vast expenditure on soap, and on repainting and redecorating our rooms. Indeed, the late Miss Garrett, who was celebrated for her skill and taste as a decorator of houses, told me she had no sympathy with the movement for the abatement of smoke, because she looked upon smoke and fog as specially sent by Providence for the benefit of decorators. The labor thus entailed is wasted force. It entails vast unnecessary labor and waste of fuel. Probably, if the price of coal had remained high, as in 1875–6, we should ere now have begun to warm our houses in a more rational way. But it is not on the ground of economy that I advocate a change; it is on the ground of purity of air. So long as we pollute the air with soot, not only is the outside air impure, but the air is so loaded with dirt that the careful householder excludes it from his rooms where possible. You would all be ashamed to supply your guests at a party with bad water; if you were equally ashamed, which you ought to be, to supply them with bad air, we should soon take measures to build our houses so as to keep up a continual flow of fresh air throughout our rooms. And then we should be rapidly compelled to take measures also for warming our houses in a way which would not pollute our atmosphere.

THE CINCINNATI COURT-HOUSE COLUMNS.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Gentlemen, — Your editorial in reference to the proposed erection in Eden Park, on the Museum grounds, of the six Corinthian columns with their pedestals and entablature, taken from the ruins of the court-house, does some injustice to the movement set on foot for their preservation, and, in view of all the facts, a true statement of the case is perhaps warranted.

The idea is *not* to erect a ruin, nor so much to preserve a memento and reminder of our late unpleasantness, as it is to preserve these columns as fine examples of Corinthian columns,— capital, base, entablature. They are the only examples of the kind in the city, except at the old Post-Office, which is to be torn down inside of three years, thus leaving us poverty-stricken for this kind of architectural material and example. It is stated that there is not even a first-class plaster cast of such a column. Now it is proposed to take these fellows and put them up in the open air, where they can stand out in bold relief against the sky, and be stared at and sketched and measured by all future (and present, for that matter) students of architecture. And where's the harm? Nobody need believe that they are a ruin, if they don't want to. You don't have to believe even that they are ever-mindful monuments of the late riot, telling of the inability of the officers of the law to take care of its property and of executing the law. No; they are to be put upon the ground (they don't go into the building, because they are too big) simply and purely as examples and models of Corinthian columns, and must be respected accordingly. Moreover, they are to be put up without expense to the County, Art Museum, or any other public fund, but the cost is to be borne by private subscription.

Now don't you think it would be better to thus preserve them than to consign them to the scrap-heap of some unappreciative stone-yard, where, after the dust of ages has buried them from the sight of men, they might possibly be resurrected, and perhaps cause future nations to expend large sums of money in digging for the ruins of a temple that they are led to suppose existed on the site, because of these bothersome columns? No; let us get rid of them by putting them up in the open air, where they speak out for what they are. Y.

ARCHITECTURAL COMPETITIONS.

CHICAGO, September 10, 1884.

TO THE EDITORS OF THE AMERICAN ARCHITECT:—

Dear Sirs, — In reading the communications of the Architectural Association of Des Moines, Iowa, in several recent issues of the *American Architect*, one is led to ask: Have we an architectural "Salvation Army" here in the West? What, precisely, they are driving at I am at a loss to make out from the sophomoric effusions above alluded to; but I presume they hope to reform the present system of competition in the West. Vain hope! The rush and striving for commissions on the one hand, and the desire to get something for nothing on the other, will be found in practice to override all considerations of professional honor ("do unto others as you would have others do unto you"), and end in the utter ignoring by the public of the position and rights of the architectural profession. This apathy or want of appreciation on the part of the public is probably due somewhat to the "methods" pursued by the architects themselves to get business. (I am speaking of the West.) No sooner is it announced that an important structure is about to be erected, than plans innumerable are thrust, unsolicited, under the noses of the proprietor or the committee, until at last, bored almost to death, the proprietor or the committee exclaims, "a plague o' both our houses!"

A few months since, a curiosity in the shape of an advertisement appeared in a Chicago daily, headed, in large letters, "Free Architecting; for particulars, address ——— ———, Des Moines, Iowa." Wishing to know how money could be made by "free architecting," I wrote to the advertiser for "particulars," and received by return mail his explanation and his business card. He was one of a numerous fraternity here in the West, an "architect and builder," and "whenever he could get a job of building by doing so, he put in the *architecting* free!" I forwarded the correspondence to the Architectural Association of Des Moines, and hope they have manfully wrestled with the subject.

In refreshing contrast to all the above, I am happy to report the recent action of the Union League Club of Chicago, who are about to erect a new club-house. A building-committee, consisting, I believe, of three members, was appointed by the club to "employ an architect

and build a club-house." The committee looked over the list of members and found the names of nine architects thereon! Was ever club so blessed with architectural talent? But no! *embarras de richesse!* What to do with it all? was the question. Should a competition be called confined to these nine architectural members of the club — waste four weeks in preparation of plans, and six weeks in a club wrangle over them, only to have, perhaps, the worst of the lot adopted, because its author was a "good fellow," an adept at electioneering, and polled the largest number of votes? And could they ignore the extra (?) claim of one architectural brother who thought he was going to the root of the matter by subscribing to the stock of the club?

And now comes the refreshing part of the whole business. Requiring the services of only one architect to build the building, the committee have appointed, *without competition*, Mr. W. L. B. Jenney, an architect of fine taste and much experience, and the writer congratulates them on the appointment, and believes they will have no reason to regret it. Your obedient servant. X.

GLAZING SASH-DOORS.

Elmira, N. Y.

To the Editors of the American Architect: —

Dear Sirs, — Please decide in next issue which is the proper way to hang a *sash-door* or *door with glass*, putty inside or outside.

Yours, etc., Fred Fuller.

[The putty should be outside. If the reverse should be tried, water would find its way between the glass and the horizontal muntins, would then in cold weather freeze and throw off the putty. Besides, the ordinary way of glazing windows and doors secures the best effect for the interior. — Eds. American Architect.]

PAYING FOR UNUSED DRAWINGS.

Cleveland, O., September 4, 1884.

To the Editors of the American Architect: —

Dear Sirs, — Will you please answer, through the columns of your valuable paper, the following questions: —

Where an architect prepares drawings and specifications for a building under the direction of his client, the drawings are submitted to contractors for estimates, and bids for the work received; then the client changes his mind respecting the work, orders the drawings laid aside, and orders the architect to make another set of drawings and specifications, which are submitted to contractors, bids received, and the building erected. Now, is the architect entitled to receive pay for the first set of drawings and the expense of receiving bids, etc.? And if so, what per cent on the lowest bid received would he be entitled to? Please answer and oblige

Yours truly, A. D.

[The customary charge in such cases is two and one-half per cent on the estimated cost. If the detail drawings have been prepared, the charge is three and one-half per cent. This is for buildings costing more than ten thousand dollars; for those of less cost the percentage would be higher, but in the same proportion to the charge for full service. — Eds. American Architect.]

NOTES AND CLIPPINGS.

St. Michael's, Coventry. — For the proposed restoration of St. Michael's Church at Coventry — the second largest parish church in England — the sum of $175,000 is required, and the sum of $130,000 has already been raised. The subscribers include Jews, Roman Catholics, Churchmen, Dissenters and Agnostics.—*Exchange.*

New Method of Tree Felling. — The London *Lumber Trade Journal* states that a new method of tree-felling by dynamite has been successfully introduced. A cartridge of the explosive substance is placed in a channel bored directly under the tree to be operated upon, and when exploded the tree is simply forced up bodily and falls intact on its side. If this system works as well as it is represented to do, and the tree is not fractured by the force of the explosion, a large proportion of valuable wood at the base of the trunk can be utilized which is now lost. For clearing forest properties to convert into arable land, this method appears admirably adapted, as it brings up the roots of the tree at the one operation, and dispenses with the tedious and costly process of grubbing the roots of the felled timber.

Discoveries at Zapatera, Yucatan.— Mr. H. Meyer, the archæologist, writes to the *New York Evening Post* from Nicaragua: "I have in my archæological excavations on the Island of Zapatera, made a rather interesting discovery. About 42 feet under the surface of an ancient cemetery (4 feet vegetable soil, 15 feet volcanic ashes, 7 feet vegetable soil, 16 feet volcanic ashes) I discovered a rock which, judging from the figures it contains, has served in remote times for astronomical observations. On this rock I have found two stone tablets, one of which contains a representation of the world; part of Africa and Asia united, Europe and this continent; a large continent is situated in the Atlantic Ocean, which I consider to be the mythical lost Atlantis, mentioned in some of the ancient authors. The other tablet contains inscriptions, of which part is undoubtedly Phœnician. Owing to the rainy season I have for the present suspended work on Zapatera, and am engaged on the Island of Ometepe, where it is possible to excavate on account of the soil. . . . The volcano of Ometepe, which opened last year, is continually working; its thunder and roaring is sometimes frightful; yet part of the people who last year left the island, have returned to their homes."

Bruges and Antwerp. — I suppose that there is hardly another town in Belgium that is to-day as poor as this once thriving Town of Bruges; one-third of her population, of less than 50,000 souls, are paupers; her waterways are stagnant, choked with weeds, and unvexed with the keels of commerce; there is no sound of heavily-laden drays in her streets, and the old buildings which stand knee-deep in her canals are overgrown with moss, and slowly decaying, without hearing the sound of hammer and saw in structures that should replace them. The oldest parts of the town seem to have changed very little, or not at all, since the Counts of Flanders, whose effigies adorn the walls of the Hôtel de Ville, held sway under the careful watch of the people, and you do not feel that you have taken any step at all into the past in going from the streets into the Hospital of St. John, where the beautiful works of Memling are preserved. It does not affect you at all to know that he painted these pictures for this very building before the fifteenth century had reached its end, and you would not be surprised if the attendant who exhibits his works should offer to take you to the painter's studio and show him engaged in his labor. I do not know that I can give any one who reads these lines a hint of the peculiar, antique charm of Bruges; I feel it very keenly, even in my rememberance of the place, but understand that it is as difficult to describe as the smell of a flower, or the taste of a fruit would be; so I can only say that if the reader does not comprehend from what I have written what it is that makes Bruges such a delightful old place to visit, he must go to the town and feel for himself what I am sure all must feel who have made trial of it. No American can come to Bruges and see its belfry, which is surely the most imposing tower in Belgium, without thinking of Longfellow's beautiful lines upon it, although he will search vainly now for the little inn at which the poet stayed at the time of his visit. The chimes are beautiful, and one listens with pleasure to the sound of their ringing by day and night, but they are not to be mentioned in the same hour with those in the cathedral at Antwerp, which I am sure make the finest bell music that can be heard in all the world. There are ninety-nine bells in the gracefully-soaring tower, which ring with every quarter hour, and at the hour itself fling five minutes of exquisite melody over the listening waters of the Scheldt. Compared with them the chimes of Bruges are harsh and noisy, for they seem to have mellowed and hushed themselves with time, until now they have acquired an indescribable beauty and solemnity of sound. You hear them best at night, when the noise of the town is hushed and the people are asleep, and I used often to go out in the darkness from my hotel near by and stand near the tower and listen to their weird and fascinating music, which seemed to come from the sky. If you will but think of all other music as material, you will understand me when I say that these bells seem to utter the spirit of sweet sound.—*Correspondence Boston Advertiser.*

A Long Pneumatic Tube.— The New York *Graphic* gives the following details concerning the proposed pneumatic tube for carrying letters and small packages from Chicago to New York. The idea at first seems impracticable, but on examination it turns out to be feasible. Two tubes are to be made of brass, which will run side by side, although it is said, one tube will be tried at first. A powerful engine with an exhaust-wheel is to be stationed at one end. It is said that if the tube is properly made and planted no air will escape. The right of way, it is believed, can be secured for nothing, or at a nominal expense, and the main cost will be the tube and the engines and stations. A letter, a sample of grain, or package of any kind which is to be sent, is inclosed in a leather ball. A ball presents the least friction as a rolling object, and the leather is to be stiff and heavy. A continuous current of air is passing through the tube constantly. With one pipe the plan is to reverse the engine every hour — the first hour forcing air into it at the Chicago end, and sending packages to New York, the next hour exhausting the air at Chicago and drawing the packages as quickly back. The men who have it in charge do not say how long it will take to send a package this way, but claim to send it in less than a minute. Stations will be established at the important cities on the route. It is expected to pay a large profit, and to do the business of the telegraph companies, express companies and the mail. They say the scheme of sending crude petroleum by a pipe for long distances, as is now done, was laughed at at first, and that this one is more practicable, if possible, and not nearly so costly, as the pipes are to be small, and can go around curves and over hill as well as on a level.

Painting Tin Roofs. — Tin on a house-top should be well painted once in four years. For roofs, light, cool colors are preferable, because they reflect the warm rays of light, and thereby lessen the expansion and contraction of the metal and the shrinking of the boards underneath, and so lessen the liability of the tin to crack in the seams. The temperature of attic rooms in summer will be materially lower if the roof be painted with a light rather than with a dark color. The writer has learned from long experience that the finest French ochre is the most economical pigment that can be used for that purpose. If, as is sometimes the case in country houses, where the roof is a conspicuous object in the architecture of the building, a dark color be indispensable, the use of pure Venetian red darkened with lamp-black, is recommended as the most durable and economical. If, by some process the oil used in roof-painting could be prevented from becoming hard and brittle, it would be a great gain. The poorest oil-paint, however, is better than neglect; and the best economy consists in keeping tin entirely and thoroughly protected from the corroding influence of dampness. Old paint, which has become "fatty" from exposure to the atmosphere, is better than new for roof painting. Not a drop of turpentine should be used for such work.—*The Metal Worker.*

Yellow Poplar. — A correspondent writing to the *Northwestern Lumberman* from Clinton, Tenn., says: "While the white-pine manufacturers do not know what to do with all their lumber, we yellow-poplar manufacturers do not know how to manage to supply the steadily increasing demand. Two years ago we could hardly get $16 for Nos. 1 and 2 here, on cars, for the Boston and New York markets, but to-day, with not ten car-loads of good poplar lumber in four mill-yards, we are readily getting $22.50."

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.]

BUILDING PATENTS.

[Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.]

304,715. SAW. — James E. Emerson, Beaver Falls, Pa.

304,730. FIRE-ESCAPE.—William F. High, Reading, Pa.

304,732. CIRCUIT-CLOSER FOR BURGLAR-ALARMS. — Albert Iske, Lancaster, Pa.

304,736. ANTI-SIPHONING TRAP.—Francis William Kelly, Minneapolis, Minn.

304,744. ROOFING MATERIAL. — Henry M. Miner, Philadelphia, Pa.

304,763. KEY-FASTENER. — Edward K. Summerwell, Covington, Ky.

304,778. DOOR AND GATE SPRING. — John Broughton, Brooklyn, N. Y.

304,780. FIRE-PROOF BUILDING.—Edward M. Butz, Allegheny, Pa.

304,781-784. STRUCTURAL SHAPE FOR BEAMS, GIRDERS, ETC. — Edward M. Butz, Allegheny, Pa.

304,785-792. — METAL COLUMN, GIRDER, OR PILASTER. — Edward M. Butz, Allegheny, Pa.

304,793. CONSTRUCTION OF METAL BUILDINGS. — Edward M. Butz, Allegheny, Pa.

304,794-795. — METAL BEAM OR GIRDER. — Edward M. Butz, Allegheny, Pa.

304,796. FIRE-PROOF BUILDING.—Edward M. Butz, Allegheny, Pa.

304,797-798. METAL BEAM OR GIRDER. — Edward M. Butz, Allegheny, Pa.

304,803. DOOR-SIGNAL. — Alonzo L. Dorn, Chicago, Ill.

304,807. WRENCH. — Benton Elmore, Etna, Cal.

304,814. LOCK-HINGE. — Daniel H. Fitzgerald, Reading, Pa.

304,820. FIRE-ESCAPE. — Joseph Merlin Hodson, Amherstburg, Ontario, Can.

304,821. FOLDING FIRE-ESCAPE LADDER. — Ferdinand W. Hofele, New York, N. Y.

304,823. ELEVATOR. — Merrill N. Hutchinson, New York, N. Y.

304,832. PNEUMATIC DISPATCH AND SIGNALLING APPARATUS.— Edwin S. Leaycraft, Jersey City, N. J.

304,833. SWITCH FOR PNEUMATIC TUBES. — Edwin S. Leaycraft, Jersey City, N. J.

304,834. PNEUMATIC APPARATUS FOR TRANSMITTING PARCELS.—Edwin S. Leaycraft, Jersey City, N.J.

304,841. SEWER-TRAP. — Frederick Meyer, New York, N. Y.

304,850. FIRE-ESCAPE. — Edward Painter, Easthampton, Mass.

304,865. METALLIC LATHING. — Benjamin Scarles, Clinton, Mass.

304,868. VENTILATING APPARATUS. — Henry N. Wickersham, Wilmington, Del.

304,894. FIRE-ALARM.—B. Jay Antrim, Philadelphia, Pa.

304,898. FIRE-ESCAPE. — Gottleib F. Bauer and Dolph Williams, Springfield, O.

304,902. PROCESS OF MANUFACTURING PAINTS. — Revere M. Breinig, Brooklyn, N. Y.

304,906. FURNACE-GRATE. — Richard S. T. Cissel, Elizabeth, N. J.

304,908. ELECTRIC INDICATING DEVICE FOR ELEVATORS.—Charles L. Clarke, New York, N. Y.

304,909. REVERSIBLE SCRAPER FOR SCRAPING AWAY OLD PAPER, CALCIMINE, ETC., FROM WALLS. —John E. W. Coleman, San Francisco, Cal.

304,911. FIRE AND WATER PROOF PAINT. — Chas. W. Colony, Sandy Creek, N. Y.

304,930. WATER AND WASTE-PIPE. — John J. Herbert, Holyoke, Mass.

304,961. MACHINE FOR TRIMMING AND PUNCHING ROOFING-SLATES.—Charles W. Romoser, Marion, O.

304,964. FIRE-ALARM. — Frank Arthur Simonds, Grand Rapids, Mich.

304,984. SASH-HOLDER. — Wilbur Sargent Young, Gillespie, Ill.

305,009. AUTOMATIC ELEVATOR-GUARD. — Franklin P. Hinds, Boston, Mass.

305,020. INSULATOR FOR LIGHTNING-RODS.—John Anthony Ruth, Baltimore, Md.

305,027. WRENCH.—Edmond H. St. John, Toledo, O.

305,033. STORM AND SCREEN DOOR. — Henry G. Wolfram, Sharon, Wis.

SUMMARY OF THE WEEK.

Baltimore.

STORE AND OFFICE-BUILDING. — Plans are being prepared by Louis J. Ginter, architect, for S. S. Clayton, Esq., for a four-st'y store and office-building, to be erected on West Fayette St., between St. Paul and Calvert Sts., to cost about $5,000.

COTTAGE. —Mrs. Kimberly is having built in the suburbs, on Cold Spring Lane, a two-st'y and attic frame cottage, 39′ 6″ x 35′ 6″, to cost about $3,000, from designs by Louis J. Ginter, architect; Thos. L. Jones, builder.

BUILDING PERMITS. — Since our last report thirteen permits have been granted, the more important of which are the following: —

C. D. Huncke, three-st'y brick building, e s Hanover st., between Conway and Camden Sts.

Henry Winkler, three-st'y brick building, n s Hudson St., w of Curley St.

G. G. Pedrick, three-st'y brick building, e s Norris Alley, s of Lafayette Ave.

S. G. Ridgaway, four-st'y brick warehouse, rear s s Pratt St., w of Fremont St.

W. I. Phillips, 5 three-st y brick buildings, s s Mulberry St., w of Fulton Ave., and 4 three-st'y brick buildings, w s Fulton Ave., n of Lanvale St.

Boston.

BUILDING PERMITS. — *Dartmouth St., No.* 139, Ward 11, for C. G. & R. T. Paine, brick dwell. and store, 43′ x 94′, flat; G. W. Pope, builder.

West Third St., No. 535, Ward 14, for Jno. J. Dorgan, brick stable, 14′ x 14′, flat; Wm. T. Eaton, builder.

Dudley St., No. 302, Ward 20, for Francis Knight, brick apartment-house, 40′ x 54′, flat; A. Ripley, builder.

Trumbull St., No. 19, Ward 17, for Frank Fox, brick stable, 25′ x 40′, flat; I. Bean, builder.

Shawmut Ave., Nos. 356-360, Ward 17, for J. F. Johnson, brick apartment-house, 54′ x 61′, flat; Jas. Smith, builder.

Bradford St., No. 50, Ward 17, for J. F. Johnson, brick apartment-house, 54′ x 61′, flat; J. Smith, builder.

Newbury St., near Exeter St., Ward 11, for W. S. Rand, 2 brick dwells., 22′ x 52′, mansard; W. S. Rand, builder.

Avon Pl., Nos. 29 *and* 31, Ward 22, for S. V. White, 2 brick dwells., 26′ x 36′, flat; S. V. White, builder.

Blue Hill Ave., Ward 21, for A. F. Brown, family-hotel, 70′ x 76′, flat; S. V. White, builder.

Kneeland St., Nos. 147-153, Ward 12, for B. S. Evans, brick workshop, 15′ x 47′, flat; Patrick & Malley, builders.

Warren St., No. 324, Ward 24, for Wm. Donaldson, dwell., 12′ x 36′, flat; Wm. Donaldson, builder.

Everett St., Nos. 60, 62 *and* 64, Ward 2, for Geo. W. Hargrave, 3 dwells., 19′ 8″ x 31′, flat; G. W. Hargrave, builder.

Medford St., No. 82, Ward 3, for Mrs. Henry Moore, dwell., 13′ 4″ x 55′ 1″, flat; Jno. McCusker, builder.

Woodville Sq., No. 19, Ward 20, for C. E. Wiggin, Jr., dwell., 16′ x 16′ and 26′ x 29′, pitch; J. McCusker, builder.

Mayfair St., No. 17, Ward 21, for Alden Frink, dwell., 24′ x 40′, pitch; C. H. Blodgett, builder.

Jarvis Pl., off George St., Ward 20, F. J. Pootunato, mechanical, 20′ x 26′ flat; F. J. Pootunato, builder.

Lauriat Ave., n Bernard St., Ward 24, 2 dwells., 14′ x 19′ and 22′ x 31′, pitch.

George St., Nos. 108 *and* 110, Ward 20, 2 dwells. for F. J. Pootunato, 20′ x 40′, flat; F. J. Pootunato, builder.

West Broadway, No. 92, Ward 13, for T. Corcin, frame storage, 14′ x 26′, flat; Jas. Edwards, builder.

Saratoga St., Nos. 817, 820-822, Ward 2, for Thos. Pounder, 3 dwell., 20′ x 26′ (817) and 20′ x 30′, pitch; Thos. Pounder, builder.

Brooklyn.

BUILDING PERMITS. — *Clymer St.*, n s, 100′ e Kent Ave., five-st'y stone factory, tin roof; cost, $25,000; owner, F. Cowperthwait; architect, W. H. Gaylor; builder, Thomas Gibbons.

Manhattan Ave., w s, 325′ s Meserole Ave., 2 four-st'y brick stores and tenements, tin roofs; cost, for both, $14,450; owner, Mary Marrett, 112 Java St.; architect, Fr. Weber; builders, James Rooney and Thomas Kepple.

Meserole St., s s, 200′ e Bushwick Ave., one-and-two-st'y brick stable, tin roof; cost, $4,000; owner, Otto Huber, Meserole St.; architect, Charles Stoll.

South Fifth St., s e cor. Ninth St., one-and-two-st'y church and Sunday-school rooms, slate and tin roof; cost, $65,000; owner, St. Paul's E. L. Church, South Fifth and Ninth Sts.; architects, J. C. Cady & Co.; builders, W. & T. Lamb, Jr., and Bernard Gallagher.

Ninth St., e s, 62′ s South Fifth St., three-st'y brick parsonage, slate and tin roof; cost, $7,500; owner, St. Paul s E. L. Church; architects, J. C. Cady & Co.; builders, W. & T. Lamb, Jr., and Bernard Gallagher.

Myrtle St., 175′ w Evergreen Ave., extending to Myrtle Ave., two-and-three-st'y frame stable and dwell., tin roof; cost, $6,000; owner, A. Lee, 152 South Second St.; architect, E. F. Gaylor.

River front, 196′ s Joralemon St., six-st'y brick warehouse, gravel roof; cost, $4 ,500; owner, F. Woodruff, 92 Remsen St.; architect and builder, T. Stone.

Powers St., s w cor. Leonard St., four-st'y frame store and tenement, tin roof; cost, $7,000; owner, M. Reynolds, cor. Lorimer and Richardson Sts.; architect, A. Herbert; builders, J. Lehigh and J. Wilson.

Monroe St., n s, 400′ w Ralph Ave., 4 two-st'y and basement brick dwells., tin roofs; cost, each, $4,700; owner, A. Peck, 755 Monroe St.; architect and carpenter, F. Marryott; mason, T. Miller.

Herkimer St., n s, 150′ w Hopkinson Ave., two-st'y frame dwell., tin roof; cost, $4,000; owner, D. Pommerenk, 2134 Atlantic Ave.; builder, W. Vitz.

Humboldt St., n w cor. Seigel St., four-st'y brick factory, tin roof; cost, $15,000; owner, Martin Worn, on premises; architect, J. Platte; builder, J. Auer.

Franklin Ave., e s, 75′ s Gates Ave., 2 three-st'y dwells., gravel roofs, wooden cornices; cost, each, $7,500; owner and builder, J. B. Alexander; architect, A. Hill.

Bedford Ave., w s, 40′ n Butler St., three-st'y and basement tenement, tin roof; owner, Mrs. S. Berri, 448 West Twentieth St., New York; architects, J B. McElfatrick Sons & De Baud; builder, A. C. Squires.

Clifton Pl., n s, 25′ w Nostrand Ave., three-st'y brick tenement, tin roof; cost, $7,000; owner and architect, Henry Van Staden, Clifton Pl., n w cor. Nostrand Ave.; mason, not selected; carpenters, Williams & Bros.

Maujer St., Nos. 189 *and* 191, three-st'y brick school, tin roof; cost, $8,500; owner, German Evangelical Lutheran St. John Church, Graham Ave., cor. Ten Eyck St.; architect, Th. Engelhardt; builders, J. D. Anderson and J. G. Hoepfer.

Union Ave., e s, 100′ n Frost St., two-st'y frame tenement, tin roof; cost, $3,500; owner, P. J. Campbell, Union Ave., near Frost St.; architect, E. F. Gaylor; builder, not selected.

Fourth Ave., w s, 50′ s Seventeenth St., 2 three-st'y brick stores and tenements, tin roofs; wooden cornices; cost, each, $10,000; owner, Thomas Pitbladdo, 213 Seventeenth St; architect, J. B. Pitbladdo; builders, W. & T. Corrigan.

Monroe St., n s, 225′ w Broadway, 6 two-st'y frame dwells., gravel roofs; cost, each, $4,000; owner, Jas. H. Hart, No. 1 Fort Greene Pl.; architect, C. F. Eisenach; builder, J. Bauer.

ALTERATIONS. — *Court St., No.* 233, new brick front and add one-st'y; also four-st'y brick extension; cost, $6,850; owner, A. Lutiger, on premises; architects and builders, M. Freeman's Sons.

North Second St., No. 380, add two stories and alter to store and tenement, front wall rebuilt; cost, $4,900; owner, John A. Albohn, 378 North Second St.; architect, L. F. Graether; builder, J. Schook.

Chicago.

BUILDING PERMITS. — J. Casey, three-st'y store and flats, 107 East Huron St.; cost, $6,000; architect, J. Otter; builder, E. Lindstrom.

J. Schramm, three-st'y store and dwell., 559 Twenty-seventh St.; cost, $8,000.

A. Weaver, 3 two-st'y dwells., 109 and 111 Seeley Ave.; cost, $6,000; builder, S. Webb.

Karl Kristan, three-st'y store and dwell., 735 Milwaukee Ave.; cost, $10,000; architect, H. F. Kley.

J. Rowe & R. Prosser, 2 two-st'y dwells., 3450 and 3452 Dearborn Ave.; cost, $8,000.

J. Busby, 4 two-st'y dwells., 3422-3428 Dearborn St.; cost, $12,000.

W. Collins, two-st'y dwell., 226 Laflin St.; cost, $3,000.

J. Gubbins, two-st'y dwell., 19 Winthrop Pl.; cost, $3,000.

B. Steinbrecker, two-st'y store and dwell., 786 Eighteenth St.; cost, $4,500.

J. W. Crandal, two-st'y dwell., 3721 Lake Ave.; cost, $5,000; architect, L. B. Dixon; builders, Barney & Rodatz.

W. H. Burnett, 2 two-st'y dwells., 2340 Indiana Ave.; cost, $8,000; architect, S. S. Beman.

S. L. & J. B. Wood, 2 two-st'y dwells., 804 and 806 West Monroe St.; cost, $11,000; architect, P. W. Ruehl; builder, J. Pratt.

Mitchell, two-st'y dwell., 635 West Adams St.; cost, $7,000; architect, Halberg.

G. W. Hoffman, 7 three-st'y stores and dwells., 3622 to 3632 Cottage Grove Ave.; cost, $35,000; architects, Thomas & Rogers; builder, J. Kraloce.

H. H. Beers, two-st'y dwell., 1225 West Jackson St.; cost, $3,000.

J. Walsh, two-st'y store and dwell., 37 Parnell Ave.; cost, $3,000.

D. A. Titcomb, two-st'y store and dwell., 124 North West Ave.; cost, $4,000.

St. Stanislaus School, basement, 55 Bradley St.; cost, $3,000.

Wm. Mahoney, three-st'y store and dwell., 147 West Jackson St.; cost, $6,000.

A. C. Gebhardt, five-st'y warehouse, 253 and 255 Kinzie St.; cost, $18,000; architect, Wm. Strippelman; builder, Geo. Eberlein.

C. Heinze, two-st'y dwell., 28 Evergreen Ave.; cost, $7,000; architects, Schaub & Berlin; builder, Chas. Krueger.

H. Kerr, 2 two-st'y dwells., 1120 and 1122 Jackson St.; cost, $7,000; architect and builder, P. R. James.

A. H. Nelson, two-st'y dwell., 185 West Division St.; cost, $2,800.

W. M. Crilly, two-st'y livery stable, 200 and 202 Thirtieth St.; cost, $12,000; architect, F. B. Townsend; builder, W. M. Crilly.

F. F. Axtell, two-st'y dwell., 512 West Monroe St.; cost, $10,000; architect, J. H. Moore; builder, J. Hebard.

J. C. Jaeger, two-st'y dwell., 438 Garfield Ave.; cost, $3,000.

A. Wiggelsworth, two-st'y dwell., 58 Oak St.; cost, $3,000; architect, A. McIntosh.

H. H. Brinton, 3 two-st'y dwells., 1183 to 1187 Van Buren St.; cost, $6,000.

R. Meadowcraft, three-st'y flats, 278-280 East Erie St.; cost, $18,000; architect, J. S. Woollacott; builders, J. Woollacott & Son.

B. Case, two-st'y store and flats, 976 West Lake St.; cost, $3,800.

E. Lehman, 4 four-st'y stores and flats, 558-564 West Harrison St.; cost, $30,000; architect, S. B. Shipman; builders, Geo. Lehman & Co.

M. Watson, three-st'y store and flats, 280 East Division St.; cost, $7,000.

D. M. Snow, four-st'y store and flats, 3403-3405 State St.; cost, $10,000; architects, Thomas & Rodger; builder, B. Robinson.

G. Reshopt, two-st'y store and dwell., 363 North Ashland Ave.; cost, $2,500.

J. D. Becket, 9 three-st'y stores and flats, 262-276 Ogden Ave.; cost, $40,000; architect, C. L. Stiles; builder, L. Daegling.

J. Alexia, two-st'y dwell., 697 West Eighteenth St.; cost, $3,500.

J. Dolsen, three-st'y store and dwell., 703 Throop St.; cost, $7,000; architect, J. Ruehl; builder, M. Holtz.

J. M. Cully, two-st'y dwell., 905 West Monroe St.; cost, $7,500; architects, Burnham & Root; builder, H. Hibbard.

Chicago Theological Seminary, three-st'y factory, 507-513 West Kinzie St.; cost, $12,000; architect, F. Naesches; builder, C. G. Mulles.

S. Brintnell, two-st'y dwell., 3438 Wabash Ave.; cost, $8,000.

T. Nickerson, 2 two-st'y dwells., 3440-3442 Wabash Ave.; cost, $16,000; architects, Burling & Whitehouse; builders, Burney & Rodatz.

M. F. Crowe, three-st'y store and dwell., 192-194 West Indiana St.; cost, $8,000.

J. Krabenstein, addition, 739 Wells St.; cost, $2,900.

Kee & Chaplin, three-st'y flats and barn, 67 Hills St.; cost, $9,000; architects, Harold & Hanson.

Bethany Congregational Society, two-st'y church, cor. Superior and Lincoln Sts.; cost, $1,000; architect, J. C. Moore; builders, Barker & Son.

H. C. Anderson, two-st'y dwell., 539 South Leavitt St.; cost, $2,500; architect, L. B. Halberg.

J. Busch, addition, 554 Sedgwick St.; cost, $2,500.

A. Silha, 2 three-st'y stores and flats, 548-550 Blue Island Ave.; cost, $15,000; architect, P. W. Ruehl; builders, Semis & Sayers.

W. H. Thomas, 3 cottages, 881-895-897 Elk Grove Ave.; cost, $3,000.

Dr. J. Ulrich, two-st'y dwell., 202 Centre Ave.; cost, $8,500; architects, Cudel & Blumenthal; builders, Mueller & Scheel.

J. M. Dowling, 4 three-st'y dwells., 129-135 Pearson St.; cost, $30,000; architect, A. Smith; builder, J. M. Dunphy.

P. & W. Brosman, 2 three-st'y stores and flats, 862-864 Milwaukee Ave.; cost, $20,000; architect, J. J. Egan; builder, M. J. Benson.

W. Howe, two-st'y dwell., 362 Fourteenth St.; cost, $2,700.

F. Schulz, two-st'y dwell., 964 Eighteenth St.; cost, $2,700.

Ashbury Church, church, 3120 Fifth Ave.; cost, $5,000; architect, C. M. Palmer.

F. Krey, three-st'y store and dwell., 168 East North Ave.; cost, $6,000; architect, Rehwaldt.

L. A. Bailey, two-st'y dwell., 780 Hubbard St.; cost $2,500.

Heissler & Jung, four-st'y bakery, cor. State and Twenty-fourth Sts.; cost, $60,000; architects, Furst & Rudolph; builder, H. Appel.

A. Churchill, three-st'y livery stable and dwell., 184 and 186 Green St.; cost, $12,000; architect, C. C. Miller; builders, O'Neil Bros.

Thos. Pursell, four-st'y store and dwell., 149 West Twelfth St.; cost, $10,000; architect, W. Ruehl; builders, Kelly & Cooney.

M. O'Connell, 2 two-st'y dwells., 3631 and 3633 Vernon Ave.; cost, $8,500; architect, J. J. Egan; builder, J. Conley.

W. J. Watson, two-st'y dwell., 2640 Prairie Ave.; cost, $30,000; architects, Treat & Foltz; builder, A. Bienolt.

M. F. Irwin, three st'y store and flats, 1186 West Van Buren St.; cost, $9,000; architects, J. Van Osdel & Co.; builders, Clark Bros.

C. Kleihn, two-st'y flats, 233 West Huron St.; cost, $3,800.

LeGrand Skating-Rink Co., skating-rink, 412 to 430 North Clark St.; cost, $7,000.

G. Edwards, three-st'y flats, 402 Maxwell St.; cost, $12,000; architect, F. Keltanick.

O. C. Johnson, three-st'y flats, 82 West Huron St.; cost, $4,000.

W. H. Thomas, two-st'y dwell., 1417 West Jackson St.; cost, $2,500.

E. J. Roda, 4 one-st'y cottages, Twenty-fourth Place; cost, $4,000.

F. Haekendehl, two-st'y flats, Laurell St.; cost, $3,300.

F. Pegel, two-st'y flats, 593 West Fourteenth St.; cost, $4,100.

Mrs. B. Bloom, 8 two-st'y stores and flats, 243 to 257 Thirty-first St.; cost, $25,000; architects, Treat & Foltz; builder, W. Illett.

E. Emter, two-st'y dwell., 323 Twenty-second St.; cost, $4,300.

M. Krauser, store, 985 Milwaukee Ave.; cost, $4,000.

Conrad Seipp, 3 two-st'y dwells., 2960 to 2964 Groveland Park Ave.; cost, $20,000; architects, Bauer & Hill; builder, C. Thiele.

J. Walker, 2 one-st'y cottages, Hanover St., cor. Twenty-eighth St.; cost, $2,700.

F. H. Edler, two-st'y dwell., 803 Clybourn Ave.; cost, $3,000.

J. A. Lamb, two-st'y dwell., 1254 West Monroe St.; cost, $2,800.

Chas. Shober, three-st'y dwell., 514 Wells St.; cost, $10,000.

Cincinnati.

Building Permits. — Mrs. Klefer, three-st'y brick building, n s of Elm St., between Liberty and Green Sts.; cost, $4,000.

Wm. Fogarty, two-st'y brick building, w s of Gilbert Ave.; cost, $2,000.

Sam. Doll, two-st'y brick building, 545 Walnut St.; cost, $2,060.

H. J. Winton, two-st'y frame building, s s of Eastern Ave., between Reed and Broad Sts.; cost, $2,000.

J. S. Dempsey, two-and-one-half-st'y frame building, w s of Eastern Ave.; cost, $2,500.

Six permits for repairs, costing $3,000.

Total cost to date, $2,479,255.

Total permits to date, 635.

New York.

Armories. — The Sinking Fund Commissioners have authorized an expenditure of $2,000,000 for new armories. A competition for plans has been decided on.

Brewery. — Conrad Stein's brewery, on Fifty-sixth and Fifty-seventh Sts., between Tenth and Eleventh Aves., is to have additions and alterations made, at an expense of about $50,000, from plans of Mr. Julius Kastner.

Inanimation is the order of the day. The stonemason s strike seems to be the last straw to break the camel's back, and outside of the most ordinary work of "up-town speculative builders," we find no work not previously noted to report.

Building Permits. — *Thirteenth Ave.*, s e cor. Fourteenth St., 2 six-st'y brick storage warehouses, gravel roofs; cost, each, $42,000; owners, H. K. Thurber & Son, 146 West Twelfth St.; architect and builder, J. G. McMurray.

One Hundred and Twenty-fifth St., n s, 225′ e Seventh Ave., three-st'y brick stable, tin roof; cost, $30,000; owner, William E. Dean, 235 East One Hundred and Twenty-fourth St.; architects, Cleverdon & Putzel.

Eighth Ave., e s, 100′ 10″ n One Hundred and Twenty-second St., 3 four-st'y brick tenements, tin roofs; cost, each, $11,000; owner, Lorenz Weiher, New Rochelle; architect, J. F. Burrows.

One Hundred and Forty-ninth St., n s, 100′ w Third Ave., three-st'y frame tenement, tin roof; cost, $3,000; owner, Fritz A. Seije, Third Ave., cor. One Hundred and Forty-ninth St.; architect, A. Pfeiffer.

One Hundred and Fifty-first St., n s, 275′ e Courtlandt Ave., three-st'y frame tenement, tin roof. cost, $5,500; owner, Geo. Stolz, 642 North Third Ave.; architect, same as last.

Fourth Ave., s e cor. One Hundred and Thirteenth St., five-st'y brick store and apartment-house, tin roof; cost, $24,000; owner, Wm. Henderson, 512 East Eighty-second St.; architect, J. C. Burne; builder, not selected.

One Hundred and Thirteenth St., s s, 26′ e Fourth Ave., five-st'y brick store and apartment-house, tin roof; cost, $21,000; owner, etc., same as last.

One Hundred and Thirteenth St., s s, 52′ e Fourth Ave., 5 five-st'y brick apartment-houses, tin roofs. cost, $20,000; owner, architect and builder, same as last.

Norfolk St., n w cor. Hester St., five-st'y brick tenement, tin roof; cost, $15,000; owner, Jacob Gottlieb, 33 Hester St.; architect, Chas. Rentz.

Sixty-ninth St., s s, 100′ w Ninth Ave., 5 four-st'y brown-stone front dwells., tin roofs; total cost, $90,000; owner, Chas. L. Guilleaume, 56 East Seventy-sixth St.

One Hundred and Tenth St., s s, 170′ w Third Ave., 4 five-st'y brick tenements, tin roofs; cost, each, $16,000; owner, Timothy Daly, Jr., 323 East Eighty-sixth St.; architect, Elbert D. Howes; builder, Hugh Meehan.

One Hundred and Thirtieth St., n s, 75′ w Boulevard, two-st'y brick building, tin roof; cost, $28,000. owner, Chas. Franke, 135 West One Hundred and Thirtieth St.; architect, Wm. Graul.

Alterations. — *Rutherford Pl., No.* 3, four-st'y brick extension, tin roof, interior alterations; cost, $6,000; owner, A. H. Flanders; architect, H. Kreitler.

West One Hundred and Twenty-fifth St., No. 40, one-st'y and basement brick extension, tin roof, also store-front in first story; cost, $3,000; owner, Bernard McGurk, 341 East One Hundred and Twenty-fourth St.; architect, Chas. Rentz.

One Hundred and Thirty-fourth St., s s, 150′ e Lincoln Ave., raise one st'y; cost, $5,000; owner, The New York Wood-Turning Co., on premises; architect and builder, Wm. J. Merritt.

Ninety-eighth St., s s, 110′ e Third Ave., to finish four uncompleted buildings; cost, $7,000; owner, Richard Claffy, 903 Bushwick Ave., Brooklyn; architect, E. D. Howes.

Philadelphia.

Church. — *Tacony St.*, cor. of Keystone and Unrich St., the St. Leo's R. C. Church is being erected from plans by Frank Watson, architect; 68′ x 140′; cost about $60,000.

Building Permits. — *Garrett St.*, e of Twenty-first St., 14 two-st'y dwells., two, 16′ x 35′, twelve, 14′ x 36′; Jno. White, owner.

Broad St., cor. Cumberland St., three-st'y store and dwell., 20′ x 66′; J. N. Pattison, contractor.

Fifth St., cor. Columbia Ave., four-st'y factory and boiler-house, 63′ x 100′; Geo. Krissler, contractor.

Howard St., n of Somerset St., 2 two-st'y dwells., 18′ x 42′; W. A. N. Fuller, owner.

Ridge Ave., n of Sedgeley St., 3 three-st'y dwells., 16′ x 54′; Z. Stout, owner.

James Ave., e of Ridge Ave., two-st'y dwell., 16′ x 46′; Chas. Bartle, contractor.

Twenty-second St., s of Allegheny Ave., 3 two-st'y dwell., 17′ x 45′; J. E. Throp, contractor.

Howard St., n of Cambria St., two-st'y dwell., 17′ x 40′; J. Firth, contractor.

Caroline St., n of Susquehanna Ave., 7 two-st'y dwells., six, 14′ x 40′; one, 15′ x 40′; Jas. B. Carey, contractor.

Sixty-third-and-a-half St., s of Hamilton St., two-st'y dwell., 16′ x 40′; B. T. Kelly, owner.

Dauphin St., w of Fifteenth St., 2 two-st'y dwells., 16′ x 50′; Jas. Shoemaker, owner.

Penn St., n of Allen St., three-st'y dwell., 20′ x 58′; Wilson Milnor, contractor.

Twenty-fifth St., bet. Sharswood and Stewart Sts., 6 three-st'y dwells., and 2 stores, 16′ x 40′; J. G. Ruff, contractor.

Sharswood St., bet. Twenty-fifth and Twenty-sixth Sts., 11 two-st'y dwells., 14′ x 34′; J. G. Ruff, contractor.

Stewart St., bet. Twenty-fifth and Twenty-sixth Sts., 11 two-st'y dwells., 14′ x 34′; J. G. Ruff, contractor.

North Eleventh St., No. 2242, two-st'y dwell., 16′ x 48′; Jos. Lutz, contractor.

Dorrance St., No. 1322, two-st'y dwell., 16′ x 26′; C. J. Newman, contractor.

Greenway Ave., w of Seventy-fourth St., 2 two-st'y dwells., 30′ x 32′; G. T. Patchel, contractor.

Cresheim Creek, near new railroad bridge, two-st'y factory building, 30′ x 50′; D. Hey, owner.

South St., Nos. 1508 *and* 1510, 2 two-st'y stores, 18′ x 40′; Geo. W. Leech, owner.

Eighth St., n of Cumberland St., 7 two-st'y dwells., 15′ x 47′; A. D. Kennedy, owner.

James Ave., e of Ridge Ave., two-st'y dwell., 17′ x 43′; D. Nunnville, owner.

Franklin St., cor. Foulkrod St., 2 two-st'y dwells., 16′ x 48′ and 20′ x 57′; A. Linn, contractor.

Twenty-eighth St., s of Oxford St., 2 two-st'y dwells., 14′ x 40′; Henry Rankin, owner.

Oxford St., e of Twenty-eighth St., 2 two-st'y dwells., 14′ x 40′; Henry Rankin, owner.

Frankford Road, n of Clearfield St., two-st'y store and dwell., 18′ x 50′; Henry G. Schultz, contractor.

Thirty-seventh St., cor. Hartwell Ave., three-st'y dwell., 88′ x 112′; Wm. C. Mackie, contractor.

Sixth St., s of Cumberland St., three-st'y dwell., 17′ x 54′; W. H. Lower, contractor.

Vine St., w of Fifty-sixth St., two-st'y dwell., 16′ x 44′; Geo. Willetts, owner.

Lyceum Ave., No. 460, three-st'y dwell., 18′ x 50′; E. C. Parker, owner.

Ash St., n w of Richmond St., three-st'y store and dwell., 16′ 8″ x 46′; A. R. De Crosta, contractor.

Ash St., n w of Richmond St., three-st'y dwell., 16′ x 40′; A. R. De Crosta, contractor.

Croskey St., s of Montgomery Ave, 6 three-st'y dwells., 15′ x 47′; Jno. S. Serrill, owner.

Twenty-third St., cor. Morris St., two-st'y dwell., 17′ x 51′; Haibach & Auchter, contractors.

Fisher St., No. 1313, two-st'y dwell., 16′ x 32′; Bridget Blake, owner.

Frankford Road, No. 3136, three-st'y dwell., 28′ x 48′; Thos. J. Goldsmith.

Marion Ave., w of Forty-fifth St., 7 two-st'y dwells., 15′ x 37′; Jno. Bateson, Jr., owner.

South St., No. 507, three-st'y store and dwell, 15′ x 54′; Dahl & Kidel, contractors.

Ashmead St., e of Main St., 2 two-st'y dwells., 16′ x 36′; G. W. Kaupp, owner.

Fiftieth St., cor. Aspen St., 4 two-st'y dwells., 13′ x 42′; Daniel Flaeger, owner.

Alterations and improvements are being made to the St. Peter's R. C. Church, Fifth St., cor. Gerard Ave., and to St. Philip's R. C. Church, Second St., cor. Queen St.; from plans by Deery & Keerl, architects and civil engineers.

St. Louis.

Building Permits. — Fifty permits have been issued since our last report, nineteen of which are for unimportant frame houses. Of the rest, those worth $2,500 and over are as follows: —

Mr. Johansen, 2 adjacent two-st'y dwells.; cost, $7,000; A. Whri, contractor.

Joseph Gallagher, two-st'y brick building; cost, $5,000; Jos. Gallagher, contractor.

G. Waugh, 2 adjacent two-st'y tenements; cost, $3,000; G. Waugh, contractor.

Mrs. Curtis, two-st'y brick dwell.; cost, $5,000; B. J. Goesse, architect; Goesse & Remmers, contractor.

Morris Maloney, 2 adjacent two-st'y tenements; cost, $4,000; T. Murphy, contractor.

Herman Stamm, 2 adjacent two-st'y tenements; cost, $7,600; Geo. Roeder, contractor.

D. Malone, two-st'y brick dwell.; cost, $3,000; T. Murpay, contractor.

D. Malone, two-st'y brick dwell.; cost, $3,000; T. Murphy, contractor.

St. Vincent Parish, two-st'y brick school-house; cost, $11,000; J. S. Frye, contractor.

T. Manning, 3 adjacent two-st'y tenements; cost, $6,000; T. Manning, contractor.

R. C. Miller, two-st'y brick dwell.; cost, $2,965; E. C. Johnsen, architect; Helm Bros., contractors.

James Burke, 2 adjacent two-st'y dwells.; cost, $3,500.

Thomas Kinneary, two-st'y brick tenement-house; cost, $3,000; M. Saine, contractor.

Rock Spring Distilling Co., one and two st'y distillery; cost, $10,000; Jno. Bambrick, contractor.

Wm. Behrens, two-st'y brick tenement; cost, $3,000; Schildermann & Gross, contractors.

General Notes.

Burlington, Vt. — C. Macomber, wood dwell.; cost, $6,000; D. S. Hopkins, Grand Rapids, Mich., architect.

Bustleto, Pa. — The M. E. Church will be remodelled, and new spire added; from plans by Hazlehurst & Huckel, architects, Philadelphia, Pa.

Casopolis, Mich. — C. S. Kingsbury, wood dwell.; cost, $6,000; D. S. Hopkins, Grand Rapids, Mich., architect.

Conshohocken, Pa.—Public school-house, of pressed brick and Trenton brown-stone, 32′ x 100′; probable cost, $18,000; plans by Hazlehurst & Huckel, architects, Philadelphia, Pa.

Farmingdale, Ill.—Two-st'y frame dwell., cost, $3,000; W. Ludlam, owner; George H. Helmle, architect.

Farmington, Conn. — The women who have been members of Miss Porter's school have raised $5,000 and will build a memorial hall to be used in connection with the school, for music-rooms and a studio. The hall will be 30′ x 46′, and two stories high.

Glen Cove, N. Y. — The plans for the new Episcopal church in this village have been completed by H. M. Congdon, of New York. The cost will not exceed $12,000. The work will be vigorously prosecuted, with a view to completion by Christmas.

Grand Rapids, Mich. — The building interest is rather quiet architecturally, in this section at present; at the same time there are a great many cheap, small dwells. being built in the suburbs, and mechanics seem to be quite busy.

The fall work seems to be of the latter class mostly.

W. A. Bencke, wood dwell.; cost, $2,500; D. S. Hopkins, Grand Rapids, Mich., architect.

J. B. Evans, wood dwell.; cost, $2,500; D. S. Hopkins, Grand Rapids, Mich., architect.

Miss McDowell, wood dwell.; cost, $2,000; D. S. Hopkins, Grand Rapids, Mich., architect.

Imlay City, Mich.—E. E. Palmer, wood dwell.; cost, $3,000; D. S. Hopkins, Grand Rapids, Mich., architect.

Janesville, Wis. — Albert Kavilage, wood dwell.; cost, $3,000; D. S. Hopkins, Grand Rapids, Mich., architect.

Kalamazoo, Mich.—G. E. Stockbridge, wood dwell. and stable; cost, $8,000; D. S. Hopkins, Grand Rapids, Mich., architect.

Kansas City, Mo.—D. B. McMechan, brick residence at 1303 Penn St.; cost, $5,000.

Dr. W. H. Kimberlin, double brick residence on McGee St., near Independence Ave., four-st'y, and 30′ x 40′ cost, $8,000.

James Park, brick house, at s w cor. Eighteenth St. and Broadway; cost, $3,000.

Minneapolis, Minn. — R. E. Lidgerwood, three-st'y brick store and 4 flats, Washington Ave., bet. Thirteenth and Fourteenth Aves. s; cost, $6,000.

Pilgrim Congregational Church Society, wooden church, s w cor. Lyndale and Fourteenth Ave. n; cost, $11,000.

F. L. Hutchins, two-st'y wood dwell., w s Fifteenth Ave., s, near Eighteenth St.; cost, $4,000.

George H. Hoit & Sons, two-and-one-half-st'y dwell., cor. of Park and Sixteenth Aves., s; cost, $7,000.

John Hidlund, double store, two-st'y, cor. of Twelfth St. and Twentieth Ave., s; cost, $4,000.

Andrew Charles, double wooden tenement, cor. Seventeenth Ave. s, and Twenty-fifth St.; cost, $4,000.

Newark, N. J.—The corner-stone of a new pastoral residence for the Rev. Father Gottfried Prieth, pastor of St. Peter's Roman Catholic (German) Church, on Belmont Ave., was laid September 14.

Publishers' Department.

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BUILDING INTELLIGENCE.

NEW ROCHELLE, N. Y. — Houses for Marcus Benjamin; two houses for J. W. Boothy; houses for Fred T. Alden, Geo. Ferguson, C. Gilmore, Wm. Colby, Mr. Lorengen, C. D. & N. Lawton, J. Rough, I. H. Ryley, and E. B. Pinckney; stores for C. G. Banks; Gilbert & Thompson, architects, New York.

NORTH PENN'S GROVE, N. J. — A new Methodist Church is to be built.

ORANGE, N. J. — For Mr. Inslee A. Hopper, a two-st'y basement and attic villa, 46′ x 90′, is to be built from designs of Mr. Alfred H. Thorp, of New York.

PELHAM MANOR, N. Y. — House for Prof. E. B. Dumond; architects, Gilbert & Thompson, New York.

RIDLEY PARK, PA. — Dwell., for Mrs. C. S. Bremer, 36′ x 55′ 4″; dwell., for Mr. T. E. Kremer, 34′ 6″ x 53′ both to be of stone and frame; from plans by Deery & Keerl, architects and civil engineers, Philadelphia, Pa.

RIVERTON, N. J. — Country house for Albert Foster, Esq., 50′ x 53′, hardwood finish; plans by Hazlehurst & Huckel, architects, Philadelphia, Pa.

Country house for Albert Foster, Esq., 50′ x 53′, hard-wood finish, colonial in style; Hazlehurst & Huckel, architects, Philadelphia, Pa.

SALISBURY, ILL. — Two-st'y frame dwell., cost, $3,000; J. H. Wells, owner; George H. Helme, Springfield, Ill., architect.

SAN FRANCISCO, CAL. — The corner-stone was laid, on September 9, of the new hall of the Society of California Pioneers, which is to cost $150,000.

STATEN ISLAND, N. Y. — Alterations and additions to the residence of George Bechtel; cost, $8,000 to $9,000; J. M. Merrick, architect, New York.

BUILDING INTELLIGENCE.

ST. PAUL, MINN. — H. W. Phillips, four-st'y brick warehouse, First Ave., n, bet Washington Ave. and Second St.; cost, $20,000.

W. B. Griffith, two-st'y frame dwell., on the n s of Grand St., and bet. Victoria and Avon Sts.; cost, $3,000.

J. Q. Adams, 7 one-st'y frame dwells., on the n s of Armstrong St., bet. Milton and Victoria St.; cost, $4,485.

Charles Hoffman, two-st'y frame dwell. house, 32′ x 62′, on the s s of Selby, and bet. Arundel St. and Western Ave.; cost, $4,100.

St. Paul & Northern Pacific Railroad Co., brick round-house, bet. First and Second Sts., Eighth and Ninth Aves., n; cost, $30,000.

John Kelly, town of Minneapolis, two-st'y store and flat; cost, $3,000.

Mrs. Robert Anderson, two-st'y building; cost, $4,500.

St. Paul & Northern Pacific Railroad Co., on terminal grounds, brick freight-house, 40′ x 720′; cost, $50,000.

St. Paul & Northern Pacific Railroad Co., three-st'y brick freight office, on terminal ground; cost, $5,000.

TRENTON, N. J. — The corner-stone of the new Catholic Church of the Sacred Heart, to take the place of St. John's Church, which was destroyed by fire, was laid August 3.

WEST RUTLAND, VT. — The Baptist Society is building a church on the s s of Ross St.

The Methodist Society of West Rutland expect to build a church this summer, and will begin work as soon as a suitable location is decided upon.

YORK, PA. — J. A. Dempwolf has the following work in his office: —

Calvary Presbyterian Church, stone and brick; cost, about $10,000.

Exhibition-hall and play-room for Orphans' Home, three-st'y, brick and stone; cost, $7,500.

One pair semi-detached half-timbered houses for Dr. Dale; cost of the pair, $6,000.

Two frame cottages and stables, for Mrs. Leidig; cost, $8,000.

Brick house, three-st'y, for Mr. E. M. Vandersloot; cost, $10,000.

Detached brick house in Queen Anne design, for Mr. Wm. Gamble; cost, about $8,000.

Three-st'y brick house for Mr. H. A. Ebert; cost, $8,000.

Extension of business premises for Wm. Smith & Co. and N. Lehmayer & Bro.; combined cost, about $6,000.

Gymnasium and extension of Y. M. C. A. building; estimated cost, $6,500.

Mr. E. F. Durang, architect, Philadelphia, has furnished drawings for house of John Blackford, Esq.; estimated cost, $6,500.

The new Catholic church now in progress will cost probably $25,000; N. Weigle, builder.

N. Weigle is also building a new banking-house, for Weiser, Son & Carl, three-st'y brick, with stone and terra-cotta trimmings; cost, about $10,000.

J. F. Patton's new drug-store, to cost $12,000, is being built by Menough & Yessler.

PROPOSALS.

FURNITURE. [At Cincinnati, O.]

Sealed proposals will be received at the office of Public Schools **until Monday, September 29, at 12 M.**, for furniture and repairs of furniture for one year, according to specifications on file in said office.

Each bid must contain the names of every person interested therein, and must be accompanied by a sufficient guaranty by some disinterested person that, if the bid is accepted, a contract will be promptly entered into, and the performance of it properly secured.

Bids must be upon blank forms, to be obtained in said office.

The right is reserved to reject any and all bids.

Bids must state on envelope "Proposals for Furniture," and be addressed to

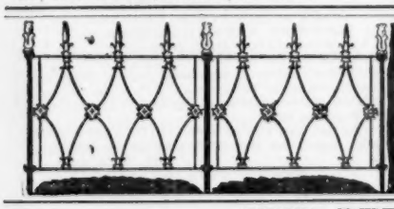
WM. A. HOPKINS,
456 Chairman Committee on Furniture.

PUMPING-ENGINE. [At Bowling Green, Ky.]

Sealed proposals, addressed to the undersigned, will be received by the Water Commissioners of Bowling Green, Ky., **until October 15, 1884, at noon,** for furnishing, building, and erecting, complete, one compound condensing steam pumping-engine, of two and one-half million United States gallons' capacity per twenty-four hours, and also for a non-compound condensing engine of like capacity.

Specifications and further information can be obtained from the undersigned, or from Chas. Hermany, the Consulting Engineer, by addressing him at Louisville, Ky.

JAS. H. WILKERSON,
458 Supt. Water Works, Bowling Green, Ky.



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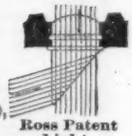

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PROPOSALS.

STATE CAPITOL. [At Atlanta, Ga.]

New sealed proposals for the Georgia State Capitol Building are invited by the Capitol Commission **until September 24, 4 P. M. 1884.**

Plans, specifications, schedules and instruction to bidders may be had upon application to the Commission, in Atlanta, Ga., or to Edbrooke & Burnham, architects, 184 Dearborn St., Chicago, Ill.

Proposals may be submitted for the entire work, or for any classified portion, also for materials.

The Commission reserves the right to accept any bid, or to reject the whole.

No proposals will be considered unless made out on the schedules blanks.

All bidders will be required to furnish bond and security or a certified check (payable to the Chairman of the Board) equal in amount to five per cent of the bid submitted, as a guarantee to enter into contract with the Board should his bid be accepted.

Bids must be sealed and indorsed "Proposals for State Capitol Building," and addressed to the Board of Capitol Commissioners, Atlanta, Ga.

HENRY McDANIEL, Governor,
456 and Ex-Off. Ch'n Commission.

JOINER'S WORK AND WOOD-FLOORING. [At Memphis, Tenn.]

OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., August 26, 1884.

Sealed proposals will be received at this office **until 2 P.M., on the 23d day of September, 1884,** for furnishing and fixing in place complete all the joiner's work and wood-flooring required for the custom house and post-office building at Memphis, Tenn., in accordance with drawings and specification, copies of which may be seen, and any additional information obtained on application at this office, or the office of the superintendent.

Bids must be accompanied by a certified check, and those received after the time of opening, will not be considered.

M. E. BELL,
456 Supervising Architect.

STONE CARVING. [At Baltimore, Md.]

OFFICE OF SUPERVISING ARCHITECT,
TREASURY DEPARTMENT,
WASHINGTON, D. C., August 28, 1884.

Sealed proposals will be received at this office **until 2 P. M., on the 30th day of September, 1884,** for carving certain granite panels, spandrels, and mouldings required for the post-office, court house, etc., at Baltimore, Md., in accordance with photographs, models and specifications, copies of the photographs and specification, and any additional information may be had on application at this office, or the office of the superintendent.

Bids must be accompanied by a certified check, and those received after time of opening, will not be considered.

M. E. BELL,
456 Supervising Architect.

CITY-HALL. [At Richmond, Va.]

CITY ENGINEER'S OFFICE,
RICHMOND, VA., August 16, 1884.

Sealed proposals are invited **until October 1 next, at 6 o'clock,** P. M., for building a new city-hall at Richmond, Va.

Drawings, specifications, and printed forms can be seen at this office.

The Committee on Grounds and Buildings reserves the right to reject any and all bids.

For further information apply to the undersigned.

W. E. CUTSHAW,
457 City Engineer.

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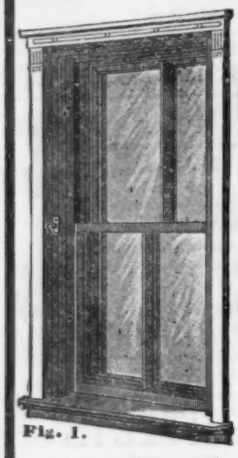

Fig. 1.—Interior view of window, with ATTWELL LOCK applied, the key-head and escutcheon being alone visible.

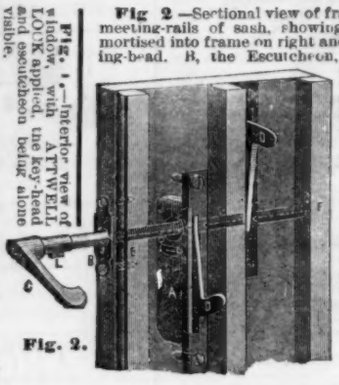

Fig. 2.

Fig 2.—Sectional view of frame at left of meeting-rails of sash, showing Locks A A mortised into frame on right and left of parting-bead. B, the Escutcheon, located over keyhole in reveal of frame. C, the REMOVABLE Key, controlling from the ONE POINT THE TWO LOCKS A A D D, the Bolts of Locks, one controlling each sash, operated separately, but working in combination. L, a lug on key, used in operating "shut off"—*i. e.*, holding, at pleasure, either bolt out of engagement with "strike."

Fig. 3.

Fig. 3.—Section of sash showing location and application of "strike." This "strike" gives four locking or ventilating points to each sash within a radius of safety from the admission of the thief's body.

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PROPOSALS.

HARDWARE.

[At Cincinnati, O.]

OFFICE OF SUPERVISING ARCHITECT, TREASURY DEPARTMENT, WASHINGTON, D. C., September 8, 1884.

Sealed proposals will be received at this office **until 2 P. M., on the 25th day of September, 1884**, for supplying and delivering at the U. S. Treasury Building at Washington, D. C., all the hardware required for the custom-house and post-office building at Cincinnati, O., in accordance with specification and schedule, copies of which and any additional information may be had on application at this office or the office of the superintendent.

Bids must be accompanied by a certified check, and those received after the time of opening will not be considered.

M. E. BELL,
456 Supervising Architect.

DAMS.

[On the Ohio River.]

U. S. ENGINEER OFFICE, 82 WEST THIRD ST, CINCINNATI, O., August 27, 1884.

Sealed proposals in duplicate will be received at this office **until noon** (local time) **on Tuesday, the 30th day of September, 1884**, for furnishing material and building dams and dikes in the Ohio River, at the points named below.

A separate contract will be made for each work:—

Pittsburg.	Place.	Work.	
9	Merriman Bar	Dike	2,200 feet long.
54	Black's Island	Dam	2,650 "
91	Wheeling Island	Dam	500 "
107	Captina Island	Dam	1,800 "
112	Fishcreek Island	Dam	1,800 "
157	Three Brothers	Dam	2,550 "
220	Sankcreek	Dike	1,500 "
453	Eight-mile Bar	Dike	2,300 "
457	Four-mile Bar	Dike	2,500 "
502	Rising Sun Bar	Dike	2,500 "
683	Flint Island	Dike	3,700 "
946	Grand Chain	Dike	3,000 "

Specifications and printed forms for proposals will be furnished on application to the undersigned.

456 WM. E. MERRILL, Lt.-Col. of Engineers.

PROPOSALS.

EXCAVATING, CONCRETE FOUNDATIONS, STONE AND BRICK WORK.

[At Erie, Pa.]

OFFICE OF SUPERVISING ARCHITECT, TREASURY DEPARTMENT, WASHINGTON, D. C., September 3, 1884.

Sealed proposals will be received at this office **until 2 P. M., on the 24th day of September, 1884**, for all the excavating, concrete foundations, and stone and brick masonry of the basement and area walls of the court-house, post-office, etc., at Erie, Pa., in accordance with drawings and specification, copies of which and any additional information may be had on application at this office or the office of the superintendent.

Bids must be accompanied by a certified check, and those received after the time of opening will not be considered.

M. E. BELL,
Supervising Architect.

COURT-HOUSE AND JAIL.

[At St. Clairsville, O.]

AUDITOR'S OFFICE, BELMONT COUNTY, ST. CLAIRSVILLE, O., September 4, 1884.

Sealed proposals will be received at the auditor's office, Belmont County, Ohio, from the 4th day of September, to the 6th day of October, 1884, inclusive, **until 1 o'clock, P. M.**, of the day last mentioned, for furnishing materials and performing the necessary labor for the erection of a court-house and jail, at St. Clairsville, O.

Each class of work and materials to be separately bid upon, to which may be added a bid for the entire work including materials.

Plans, specifications and bills of material may be seen at the auditor's office, in said county on and after the 4th day of September, 1884, and at the office of J. W. Yost, Architect, 67 South High St., Columbus, O. Each bid must be accompanied with bond equal to 25 per cent of the amount of the bid as a guaranty that, if awarded, the contract will be completed, and proper bond given for its completion.

The right to reject any or all bids is reserved.

Blanks will be furnished bidders on request.

458 R. R. BARRETT, Auditor.

PROPOSALS.

DIKE.

[Thames River, Conn.]

ENGINEER OFFICE, U. S. ARMY, 11 INSURANCE BUILDING, NEW HAVEN, CONN., August 11, 1884.

Sealed proposals for constructing a dike in Thames River, Conn., will be received at this office **until 10 o'clock, A. M., on Monday, September 22, 1884.**

Proposals must be made in triplicate. Specifications, blank forms and instructions to bidders may be had on application at this office.

WALTER McFARLAND,
456 Lt.-Col. of Engineers.

IRON-WORK FOR ROOFS.

[At Washington, D. C.]

OFFICE OF SUPERVISING ENGINEER AND ARCHITECT, NEW PENSION BUILDING, WASHINGTON, D. C., September 5, 1884.

Sealed bids are invited for building and erecting the iron roofs over eighty thousand square feet, of the new Pension Building, in Washington, D.C. Specifications and plans can be obtained on application in person or by letter to this office.

All bids received will be opened in this office **at 12 o'clock, noon, on the 25th day of September, 1884.**

M. C. MEIGS,
456 Supervising Engineer and Architect.

STONE.

[Near Mt. Carmel, Ill.]

U. S. ENGINEER OFFICE, 82 WEST THIRD ST., CINCINNATI, O., August 30, 1884.

Sealed proposals in triplicate, will be received at this office **until noon on Tuesday, the 30th day of September, 1884**, for furnishing stone for the construction of a lock in the Wabash River, near Mount Carmel, Ill.

Approximate quantity of stone required, 7,245 cubic yards, or as much thereof as the present available funds ($30,000) will permit.

Specifications and printed forms for proposals will be furnished on application to the undersigned.

Requests for blank forms should be indorsed on the envelope "Official Business."

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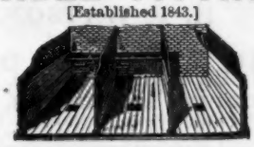

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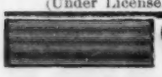

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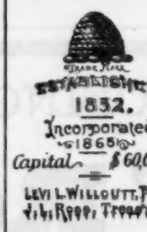

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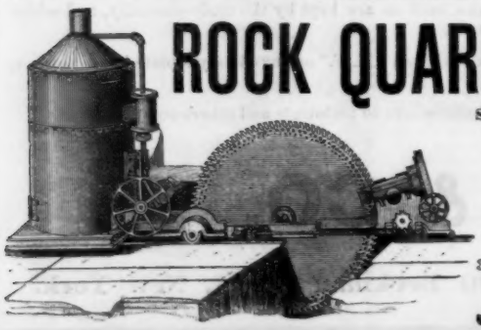

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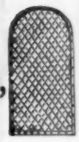

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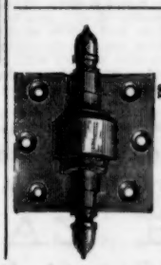

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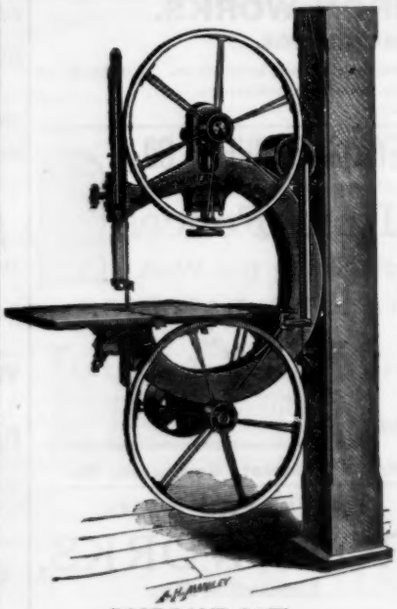

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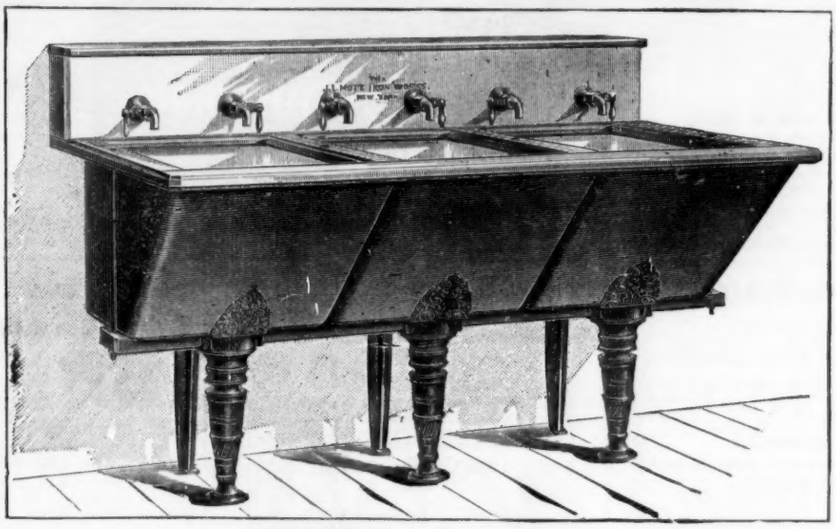

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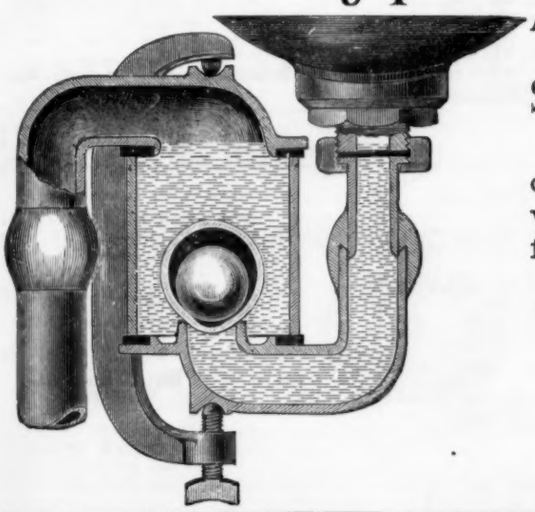

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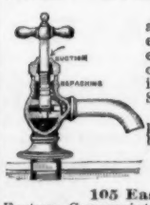

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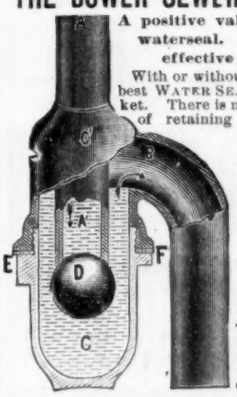

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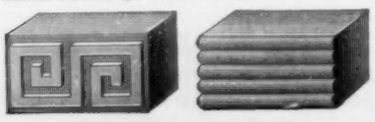

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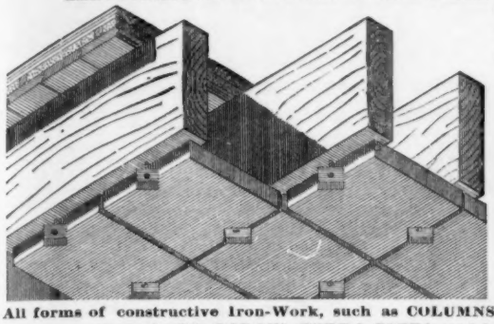

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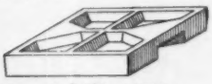

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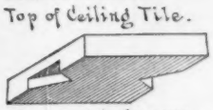

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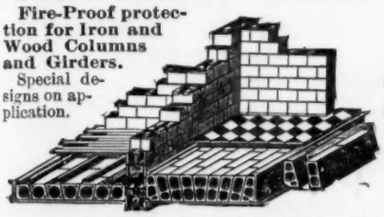

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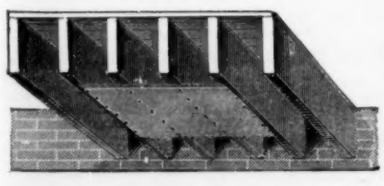

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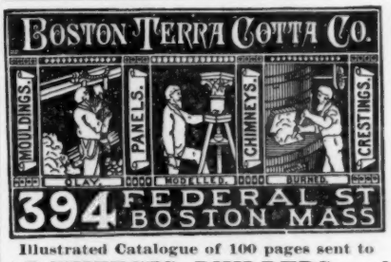

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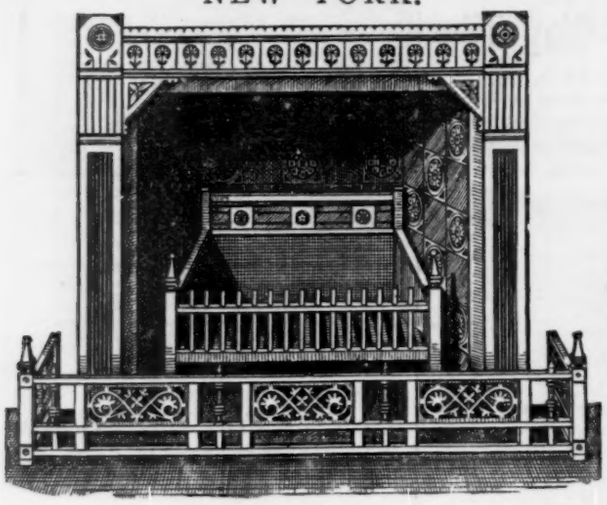

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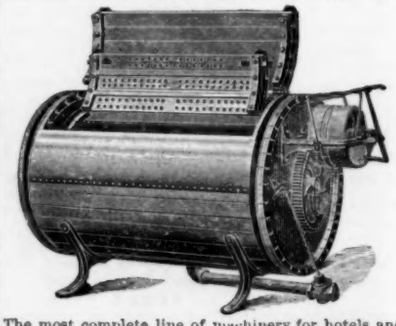

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